

The Mining Journal

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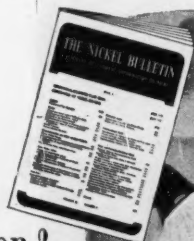
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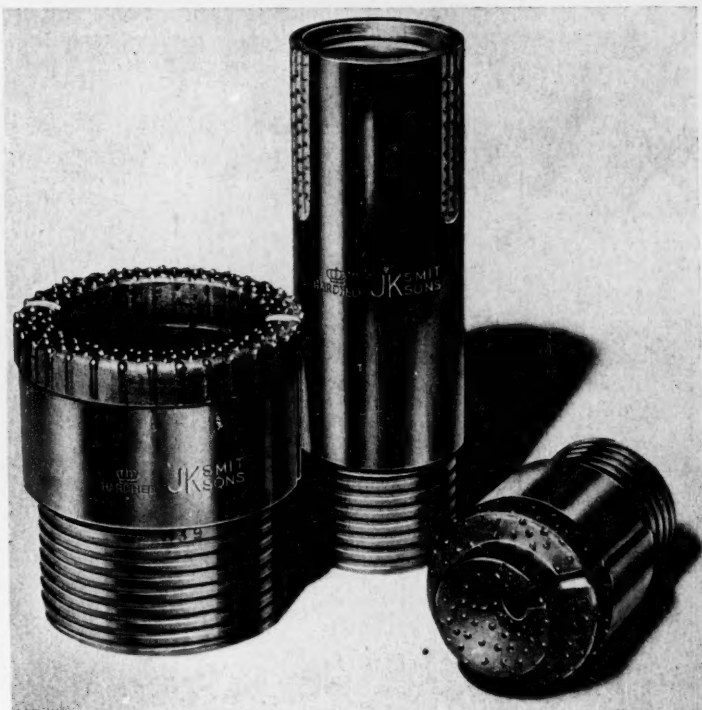


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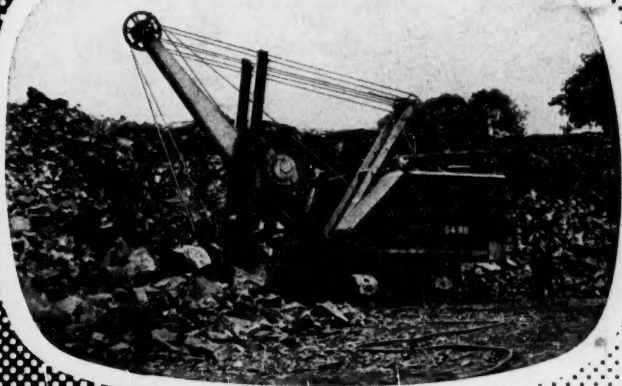
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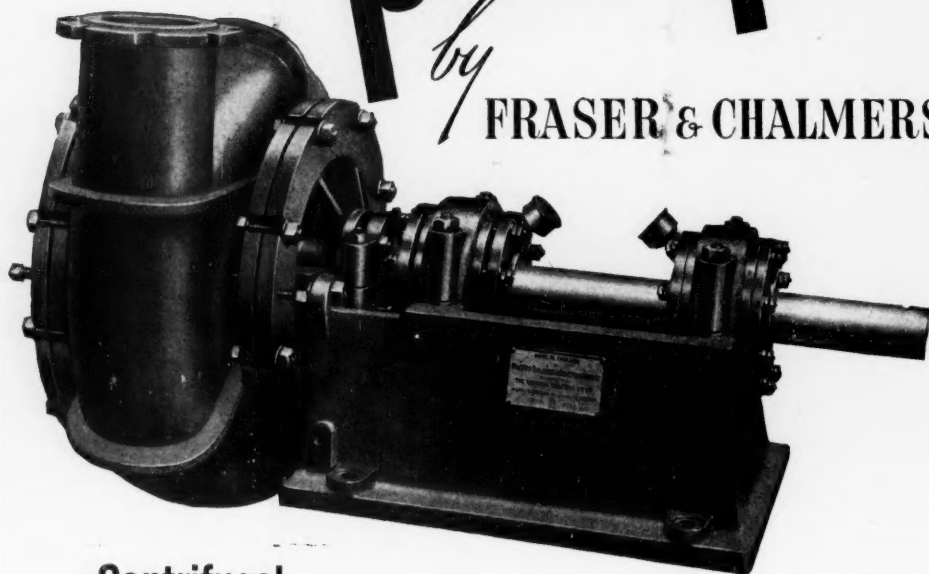
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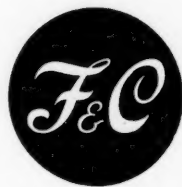
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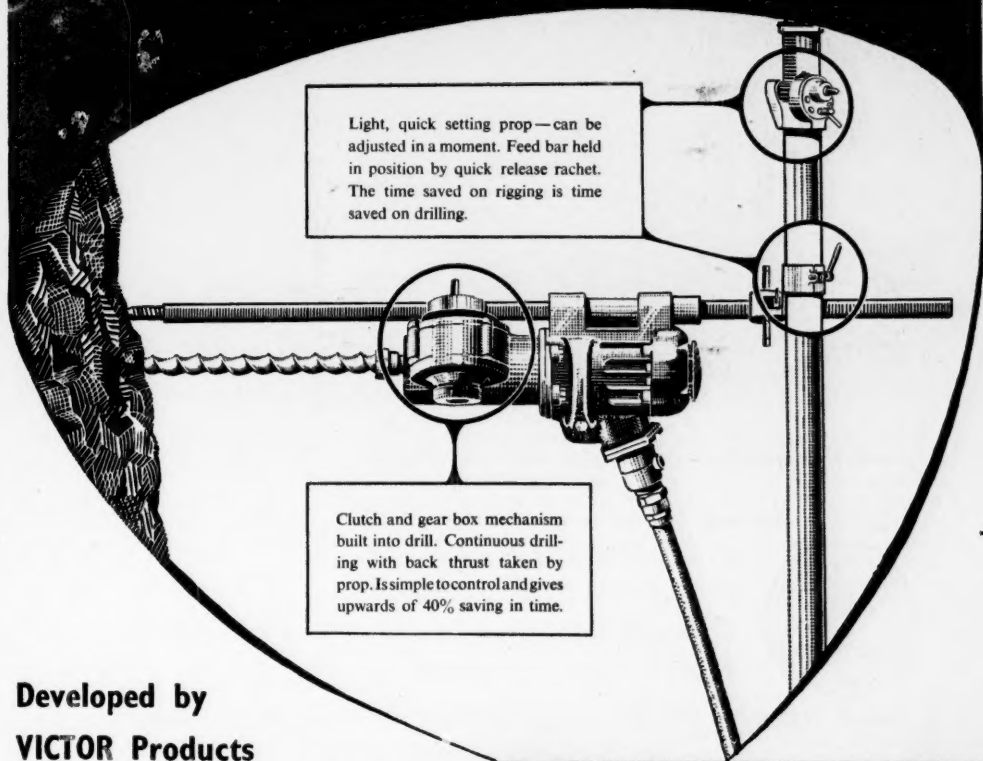
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NOTES AND COMMENTS

We Must Get the Coal

Mr. Churchill's Government is now working intensively to overhaul the national economy and place our finances in a position of balance or at least to greatly reduce the deficit financing which has been the rule since the war. One of the most pressing and possibly most difficult of these problems is presented by the Coal industry.

In 1913, Britain exported some 100,000,000 tons of raw and manufactured fuel. For the first ten months of the current year we have exported 6,286,800 tons (excluding bunkers of approximately 3,000,000 tons) and imported 1,211,997 tons principally from the United States. Moreover, exported coal was valued at £3 15s. 6d. a ton as against imported coal valued at approximately £7 3s. a ton.

Here then is one direction in which substantial saving would be possible if we were able at any rate to meet our own requirements. But the effects of this failure reach considerably further. Mr. Porter, special representative for the E.C.A. in Europe who has just gone to Washington, stated last week that the failure of European Governments, more particularly Britain, to mine their own coal requirements was the one black mark on Europe's production record and called for a change in policy at the highest cabinet levels. He particularly criticized our failure to make use of unemployed Italian labour which was clamouring for a chance to work in the coal mines.

The *New York Times* has declared that Europe's coal shortage could be easily overcome if British labour would accept Italian miners, adding caustically "Europe spends the bulk of American dollar aid to carry American coals to Newcastle," and said it was a situation which cried out for a remedy. Whether these statements are not an over simplification of the position is very arguable but there can be no doubt about their effect on United States sympathy and willingness to extend aid to Britain and is no doubt one of the criticisms which Mr. Churchill will have to meet in Washington.

As our Australian correspondent points out this week, a somewhat similar position now exists there also. The lack of incentive to more vigorous effort by the coal miners stems largely from the taxation system in both instances: frequent increase in wages do not have the desired effect

of stimulating production because larger earnings bring miners within the range of income tax and they have a natural indisposition to work harder if their extra earnings are absorbed by the tax collector.

This condition has been so long prevalent in this country that there is danger of it being overlooked, especially when the coal miner is so often advised to regard his calling as indispensable to the basic economy of the country. Not only have miners' wages been increased perhaps more than those of any other essential calling but large sums of money have been expended and more projected in mechanization and capital investment generally. The idea of sacrifice in the national interest has not made much progress among the coal mining community and it is high time that some kind of a crusade should be instituted. If pecuniary advantages do not work effectively an appeal to the miners' pride and a spirit of emulation are well worth considering.

In the United States there are normally about 400,000 miners employed for a production of say 600,000,000 tons a year. In this country approximately 700,000 men are employed for an output of some 218,000,000 tons. Even allowing for the easier mining conditions which obtain across the Atlantic, the disparity remains a startling one.

Without Comment

A Press report last week from Singapore that the U.S. was enquiring for 30,000 tons of tin for next year has elicited a denial from there of any knowledge of such an approach and a spokesman of the R.F.C. in Washington declared that they had no knowledge of anything of the kind. The administrator of the Corporation, Mr. Stuart Symington, strongly reaffirmed his general attitude when addressing the American Bankers' Association in Chicago recently. After pointing out that the only chance for U.S. to succeed in their task of establishing Western world security without bankruptcy was to procure and operate with economy and maximum efficiency; he concluded, "if we cannot buy at reasonable prices we intend to make our present supplies last."

Meanwhile the conflicting viewpoints which exist on this subject in the States are thrown into relief by the recent remarks of Mr. Warren S. Lockwood, an associate director

of the Washington Natural Rubber Bureau. Writing in the December issue of the Bureau's *Notes*, Mr. Lockwood declares that any further withdrawals of tin from the stockpile would mean that it "would in effect become a price buffer stock to be used at will to lower the price of an important commodity."

"We should think," writes Mr. Lockwood, "that Congress might be somewhat perturbed at the idea of permitting price considerations to influence their maintenance of the stockpile as an inviolate entity except in cases of dire national emergency. We also believe that the stockpile principle was conceived and designed as a war nest-egg and was not to be used as a civilian economy price weapon at the sacrifice of valuable material reserves."

"We can well imagine the dire consternation which would be caused among the cotton farmers of the U.S. if a foreign power accumulated a strategic stockpile of cotton and then proceeded to dump it on the market whenever they felt the price of cotton was too high."

As Mr. Lockwood observes, the best way of ironing out conflicting producer-consumer interests is to let the law of supply and demand find out what is a fair price to give. "Certainly," he says, "it is hardly playing the game to thwart the supply-demand price level by injecting a consumer buffer stock element into the picture, which at its worst could drive a producing industry to disruption and at best would produce an unpredictable market situation subject to the whims and fancies of a small coterie of administrative officials."

Indian Diamond Mining Industry

The present system of marketing diamonds in the Panna State, India, now merged with the Vindhya Pradesh States Ministry, is most unsatisfactory according to Mr. M. G. Kulkarni, the managing agent of the Panna Diamond Syndicate. In the annual progress report of the Panna Diamond Mining Syndicate, which is the first and only one of its kind in India actively engaged in the diamond mining industry, he explains that throughout the year there are at the most three auctions held and sometimes less. The present practice of selling diamonds is to auction each stone separately causing endless delay. Furthermore, payments for purchases are not made on the fall of the hammer but grace is taken, in some cases up to six weeks before payment is made, which in effect means that considerable cash resources are lying idle. While this practice may be satisfactory for the comparatively small output of the company's leaseholders, when the Syndicate gets into full production, the company's output from the central treatment plant at Majgawan will, at all events, cause a state of chaos and may possibly react unfavourably on the prices realized. At present the bulk of the Panna diamonds is absorbed by local cutters in Panna itself.

Therefore, it is suggested that the Indian Government should be approached with a view to changing the present system to bring it into line with current world practice. This, of course, refers to the system operated by the central diamond buying corporation in South Africa which, if introduced into India would give a bigger incentive to production, reduce the pressure on cash resources and place the industry on a more solid footing.

Referring to mining regulations the report declares that the diamond mining industry in Panna has established the tradition for a whole family to work including women and children. As, however, the Indian Government have recently placed diamond mining within the category of metalliferous mining certain rules and regulations have now to be enforced which have caused hardship to both producer and worker. An example of how this works out in practice is that under the new regulations, the employment of women underground is forbidden and also of juveniles under the age of 16. Although the Panna Syndi-

cate is observing these rules both at Shahidan and Majgawan, where there are alluvial deposits, the sub-lease holders find it extremely difficult to observe these regulations and several of them have had their sub-leases cancelled for failure to comply. It is therefore suggested that open cast diamond mining, as practised by the sub-lease holders, come within the category of quarrying, which appears not to be subject to any such restrictions. The report adds that several sub-leaseholders have informed the company that strict compliance with the regulations would render diamond mining as they practise it uneconomical and they would be obliged to close down. In a small township like Panna this would cause genuine hardship to many families whose only source of income is employment in the mines.

While it is difficult to place India's diamond mining industry in proper perspective, especially as the Panna Diamond Mining Syndicate stands alone in this field, it would appear that there is room for a much bigger industry than at present. This is borne out by the statement appended with the report of Dr. A. E. Waters and Mr. Royden Harrison who visited the Panna Diamond Mines after Sir Ernest Oppenheimer had offered the company technical advice. Their considered view was that the diamond field would continue to produce for many years to come and that there appeared to be no reason why further areas of diamondiferous ground in Shahidan should not be found and exploited. In fact, they added, "it seems almost certain that there are such areas still untouched."

The company has an up-to-date plant of 250 tons capacity which is now in production and it is intended to purchase angle-dozers, excavators and scrapers to raise output and lower costs. This should have a stimulating effect on diamond cutting and setting industry in Bombay where there are some 3,000 skilled workers.

In 1949, the latest year for which statistics are available, Indian diamond production amounted to 1,632 ct. valued at 274,995 rupees.

Ceylon

(From Our Own Correspondent)

Colombo, December 4

There will be a decline in the price of gold in Ceylon as the Central Bank, which has taken over the importation of gold, will fix the price considerably below the present market price. The present price of a sovereign is Rs.96, although the landed price is about half this figure. The price of a sovereign is expected to be fixed at about Rs. 76, which will then be the same as the Indian price. If the local price differs from the Indian price of gold to any appreciable degree, gold smuggling is feared.

A double threat to Ceylon's mining industry may be provided by Norwegian mines and U.S. synthetics if the island's production methods are not improved and stepped up, said Mr. George F. Pettinos, an American industrialist, who recently arrived in Colombo. Mr. Pettinos is Vice-President of George F. Pettinos Inc., of Philadelphia, manufacturing dealers of industrial sands and graphite refactories and insulation, which has been using Ceylon graphite extensively since 1892.

The U.S.A. is now buying graphite from Norway because it costs half as much as Ceylon graphite and is easily obtainable in the quantities required. Ceylon still had a reputation for having the highest quality graphite deposits, but the supply is far from adequate. America is meeting this inadequacy by producing synthetic graphite. Ceylon graphite, because of its natural purity, is being used extensively in the production of the atom bomb.

A "Hall of Minerals" housing a first-class collection of Ceylon gems will form part of the Colombo Exhibition which will be held in February under the auspices of the Colombo Plan. It will include, if possible, the largest star sapphire in the world, graphite and other minerals.

Australia

(From Our Own Correspondent)

Melbourne, November 30

Following representations to the Commonwealth Government by the gold mining industry on the important subject of premium gold sales, a conference was recently held between representatives of the several Chambers of Mines and the Federal Treasury, which had already considered this matter following the well known recent ruling of the I.M.F. The outcome of this conference is very satisfactory, as the industry's requests have been acceded to; premium sales of newly mined gold for industrial purposes have been approved—a decision which exceeded expectations, and which initially looked to a possible concession of 40 per cent.

THE PROBLEM FOR THE FUTURE

The problem for the future is, how much gold can the free markets absorb before saturation reduces the price. The proviso affecting future disposal of gold is that sales must be made for U.S. dollars, which will be sold to the Commonwealth Bank against Australian currency. Arrangements to ensure that all producers have equal opportunity to share in the additional revenue from premium sales are being worked out by the Chambers of Mines. The machinery for this purpose will take the form of a Gold Producers' Association, which will be responsible for the distribution of premium revenue from gold sales among the producers, who will be members of the Association. The constitution of this new body, its articles of association, and methods of operation, are at present being considered so that it is not possible to indicate the procedure likely to be followed.

There is diversity of opinion as to the benefit to be derived from the premium sales plan, due in some measure to the fear of open market saturation. When the project seemed to be limited to some 40 per cent of output, views were expressed that benefits would not be as great as expected, but in other quarters, a less pessimistic view looked to a possible gain, to producers, of some £A.600,000 per year, a gain that will now be much higher.

Actually, the I.M.F. ruling will save the industry, which had closely approached extinction through steeply rising costs and limited selling price. However, the fact must not be overlooked that the cost position continues to be a serious menace; on the other hand, the removal of selling restriction will give new incentive to the profitable mines and security to marginal enterprises. Whether there will be renewed prospecting and development is obscure at the moment, for the future is still clouded by high costs, shortage of materials and labour and prescribed hours of work.

There has also been a recommendation, from a taxation committee, that the exemption of dividends from gold mining be withdrawn and that no good purpose would be served in encouraging the mining industry generally by modification of taxation on mining companies directly, or on the dividends in the hands of shareholders, a contention that will find no support from the industry.

POSITION OF MAIN COPPER PRODUCERS

Australian copper production continues to be far below the country's copper requirements, which can only be met by imports, mainly from Africa. The completion of the new copper section of the milling plant and the copper smelter at Mount Isa Mines, Queensland, will about double the present output of copper, totalling some 36,000 tons. Production from the Mount Isa copper lode is expected to commence in 1952 and will be 18,000 tons per annum,

but by the time the increased output of metal is being delivered to the local market, annual demand will have increased to 50,000 tons. In order to assist Mount Isa Mines to commence production with as little delay as possible, the Commonwealth Government will sponsor dollar orders for furnace bricks and assist the company in obtaining urgently needed piping from domestic sources.

Progress is not easy for the other two large producers. Mount Lyell, in Tasmania, has incurred heavy expenditure in purchasing new equipment for the mining and milling of its low-grade open cut ore, but operations continue to be severely curtailed by shortage of coke for smelting, and since the position on the mainland coalfields is not improving, there seems little chance for adequate supplies. Recent developments at Mount Morgan, in the development of a large new ore body, offer an assurance of continued large output, if not an increase, by that company. Mount Morgan's production last year was 4,119 tons of copper; Mount Lyell produced 7,195 tons, and New Occidental, N.S.W., produced 788 tons from its Chesney mine.

A most important factor affecting the copper mining industry has been the increase in the past 13 months of £A.105 per ton, which price has permitted a margin, though not a large one, above costs. The significance of the rise in costs is shown by the cost of smelting copper at Mount Morgan which, in a period of one year, increased from £A.39 18s. 2d. to £A.48 2s. 7d. per ton and the cost position at Mount Lyell will doubtless be similar.

The effect of the Sugarloaf development at Mount Morgan on ore reserves, is to increase them from some 6,000,000 to the vicinity of 15,000,000 tons. Beyond the four large companies, copper production can be increased by opening up small, abandoned mines; this would be feasible by operation in groups with central treatment plants, but is at present unattractive by reason of labour, costs, materials and taxation.

COAL PRODUCTION DIFFICULTIES

Coal continues to be one of the country's greatest problems, as the Communist domination of this industry continues without change, with never ending disruption to production. A recent recommendation by the Commonwealth Committee on Taxation is that the industry may be developed and the miners' conditions improved by a plan which would involve an increase in the price of coal by 4s. per ton, by means of which an increased production of coal might, indirectly, result. It is only too obvious that previous heavy expenditure by the Joint Coal Board, on the improvement of conditions and the provision of amenities, has proved to be no stimulant to output or to better industrial relations and peace in the industry. The proposed increase in price would, therefore, be merely another addition to the industry's burden.

Progress is being made towards coal washing and two modern coal washing plants are now approaching completion, one at the Commonwealth colliery on the Western coalfield, and the other on the Muswellbrook field, north of the Maitland field (N.S.W.). Another plant is to be erected at Ben Bullen, near the Commonwealth mine, and equipment is due to leave the U.S. almost immediately. The plants will incorporate sink-float equipment, and active search is being carried out for suitable deposits of magnetite as a medium. The Joint Coal Board is examining plans for the erection of a coal cleaning plant at Newcastle. It is proposed to clean gas coal before shipment to southern States; although this work can be more expeditiously, economically, and successfully done at the mines, the inclination is to establish this cleaning plant on the Newcastle waterfront. It is estimated that coal shipped to southern States contains 50,000 tons of rock per year.

Mining Low-Grade Copper Ore

By R. H. WARRING

Something like one-twelfth of the world's copper is mined in the United States, which has an annual production little short of 1,000,000 tons, according to the latest figures. Over one quarter of this figure, it is interesting to note, is produced by the Kennecott Copper Corporation's open pit mine at Bingham Canyon, near Salt Lake City. The largest single copper mine in the world, Bingham Canyon deposits comprise very low-grade ore and it is only by tackling the job on an immense scale that economic working is achieved. The average copper content of the ore is just about one per cent and so an annual copper output in excess of 200,000 tons from this mine demands the working of twenty millions tons of ore.

During its forty-five years of working the Bingham project has produced startling changes to the whole countryside. A whole mountain has been dug away, to be replaced by an immense pit, while nearly a thousand million tons of overburden have been dumped clear of the mining area.

At present, the 2,000 ft. pit, which comprises the Bingham mine, is being worked on a series of terraces, 45 in all, linked by over 100 miles of railway

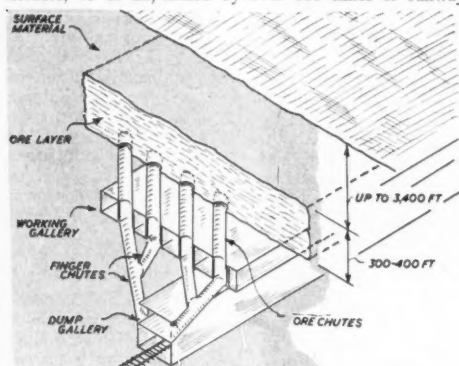


Diagram Showing the Principle of Block-cave Mining

track. Each terrace or level is approximately 70 ft. apart and from 100 to 250 ft. wide. Working consists of blasting away the cliff that forms the wall, loading the loosened ore into railway trucks with the aid of electric shovels and transferring it to an on-the-spot reduction plant. The whole gigantic pit is continually being widened. Levels are constantly being narrowed by blasting taking place on the level immediately below, and then widened again by further blasting on the outer wall, and so on.

The technique adopted in the Bingham Canyon mine has been accepted as a standard for open-pit copper mining in the United States and most other open-pit mines are worked in a similar manner. One of the largest of these is the Phelps Dodge mine in Arizona where 200,000,000 tons of waste "topping" has first been removed before terraced working could be established on the low-grade ore itself. This project, too, will eventually develop into a huge expanding, terraced amphitheatre with an estimated potential yield of over 2,000,000 tons of pure copper.

The majority of the copper reserves in the United States now exist in the form of low-grade ores, with an average copper content of around one per cent and usually traces of silver, gold and molybdenum. Extraction only becomes a commercial proposition when huge quantities of ore can be worked at a satisfactory rate, as achieved with the open-pit technique. Where such low-grade deposits are considerable, it can often be a proposition to first remove

surface material to expose them, as in the Phelps Dodge mine. In other areas, it is impracticable to remove all the surface material necessary.

Block-cave mining has recently been applied with success to some examples of the latter case. Probably the most outstanding, if only from the size of the project, is the Butte mine run by the Anaconda Copper Mining Company. The Butte mine was, in fact, one of the leading sources of high-grade copper ore, and also yielded large quantities of zinc and manganese. Since it was started in 1910, however, it has largely been worked out. There still remain vast quantities of low-grade copper ore in layers 300 to 400 ft. thick, but at anything between 400 and 4,000 ft. below the surface. The shallowest layer is a relatively small one, only 200 ft. down.

The exhausted Butte mine is now being revived as the Greater Butte project, worked on the block-cave method with an anticipated yield of 15,000 tons of ore per day. If this is realized it will be equivalent to some 50,000 tons of pure copper per year. The mills for handling the ore are already there but the driving of new shafts and preparation alone for block-cave mining has already cost over \$20,000,000.

The principle of block-cave mining can best be described by reference to the diagram. The layer of ore is lying several hundred feet below the surface and normal recovery methods could not produce the quantity of ore required to make working a commercial proposition.

DRIVING MAIN TUNNEL

First, a main tunnel is driven below the level of the ore and above this a wide, shallow tunnel connected to the main tunnel by a system of near vertical raises called finger chutes. A surface area of between 100,000 and 150,000 sq. ft. is undermined at a time. The shallow tunnel is undercutting the ore and has to be blocked and supported. At various points from it raises are put up towards the ore itself, but leaving a supporting roof.

If now the roofs of these individual raises are blasted away, ore will be free to spill down them, into the appropriate sections of the shallow tunnel and thence down the finger chutes to the main tunnel. The action is progressive. Once ore has started to move it will disturb and crumble the main ore layer and the majority should fall away in a similar manner. The number of chutes worked at a time controls the rate of ore flow to the main tunnel.

This main tunnel takes the form of a double-section. The spilling ore collects in the top section whence it can be fed directly into five-ton dump trucks. Trains of filled trucks are hauled by electric locomotives to the skip shafts where they are discharged into the 12-ton skips. At the surface, these skips unload into a hopper, which in turn loads surface trucks to convey the ore to the mill.

Block-caving continues under the whole of the layer until most of the ore has been recovered. Where the ore layer is particularly thick, it may be worked in stages or sub-layers, so that as much as possible of the deposit is recovered. The void left by removing the ore will almost certainly not remain unfilled. Subsidence of the surface material is usually inevitable so that the whole of the underground working will eventually be marked by huge depressions on the surface of the ground or the virtual collapse of hills and mountains.

Obviously, the method is one which can introduce many complications, but the working of the new Butte Project will be watched with interest; if it is successful, then undoubtedly block-cave mining will be applied to other underground low-grade ore deposits, and not necessarily confined to copper ore.

Water—the Key to South African Industrial Progress

By J. P. LESLIE, B.Sc., F.R.S.A., M.I.C.E., M.(S.A.)I.C.E., M.(S.A.)I.Mech.E.

Last week's issue of *The Mining Journal* contained the first part of an article which appeared in No. 3 of *Optima*, a quarterly review published by Anglo American Corporation of South Africa, dealing with topographical and climatic factors relating to South Africa and with the first major industrial utilization of the waters of the Vaal River. This article is being concluded by the following facts and figures regarding the future economic use of this river, which forms the most important source of water in the Union of South Africa.

To develop the Vaal River to its optimum capacity, it would be necessary to increase the storage provided at Vaaldam to 470,000 million gallons and to provide storage between Vaaldam and Christiana of not less than one-half of this capacity. It is possible to increase the capacity of Vaaldam from 235,000 million to 470,000 million gallons economically by providing barrage gates on the existing wall, but it is not at present economic to provide sufficient storage below Vaaldam. Nevertheless, estimates show that the Vaal River can be developed to maintain an assured draw-off at Vereeniging of 600,000,000 gallons per day, and a total draw-off from the river down to Kimberley of 800,000,000 gallons per day.

The assured flow of the Vaal River above Kimberley will have to supply water for (a) the domestic requirements of the whole of the urban and rural population of the Northern Free State and the Southern Transvaal and (b) the industrial and mining requirements. Part of the flow, though not necessarily secured, is required to meet (a) the abstraction rights of riparian owners and (b) irrigation requirements. The quantity of water required under each of these headings cannot be estimated with any certainty, but the following figures show some quantities of water that have already been allocated or reserved:

	Million gallons
(1) Rand Water Board (existing statutory rights)	215
(2) Kimberley Water Works (Vaal River Development Scheme Act) say	10
(3) Free State and Far West Gold Mines (as estimated by the Irrigation Department)	30
Total (Domestic, Mining and Industrial)	255
(4) Riparian Owners	110
(5) Water required by irrigators at Vaal-Hartz	200
Total allocation	565

The Vaal-Hartz irrigation scheme is designed to abstract up to 540,000,000 gallons per day. It has been stated that the minimum below which the supply to irrigators at Vaal-Hartz must not fall is 200,000,000 gallons per day, and if this is added to the requirements for domestic and industrial purposes that must be maintained throughout the year and the draw-off of riparian owners which cannot be abated, at least 565,000,000 gallons per day of secured water is already allocated or reserved.

Much of the water drawn off for urban and industrial purposes will be returned and re-used, and there is no reason why this should not be so, provided that stringent safeguards are enforced and certain standards are observed. Older countries, such as America and Great Britain, deplore the fact that measures were not taken to control the discharge into streams before industries became established. It is most difficult to make legislation retrospective and to control discharges that have been an accepted practice for many years. South Africa, in some respects, is in a more fortunate position in that the country has not yet felt the full impact of industrialization, and the problem of pollution of natural waters could be met before vested interests become so consolidated as to inhibit the carrying into effect of protective measures.

Possibly the most important factor that will determine the maximum economic use to which the flow of the Vaal River can be put, is the use of the water over and above

the assured flow. An analysis of the flow shows that, if sufficient storage is provided, the flow of the Vaal River could be regulated so as to yield a gross average daily flow of 1,340 million gallons per day for 60 years out of every 100.

ECONOMIC DEVELOPMENT WILL ENTAIL RESTRICTIONS

It is not suggested that the water in the river should be, or can be, allocated up to this limit, but it does indicate that there is much water that, subject to restrictions, can be used. There is sufficient flexibility in the requirements of urban and industrial users to permit of a considerable reduction without hardship. Water required for irrigation can be reduced more easily and with less damage to the economic structure than water used by industry, but for the ultimate and complete development of the resources of the Vaal River it will, in time, be necessary to recognize



The Vaal River Barrage

that for certain years and periods general restriction must be expected and enforced.

The Irrigation Act divides water into three categories: (i) primary, (ii) secondary and (iii) tertiary. Primary water is that required for domestic use (urban and rural) and rightly is placed in the first category. The provision of ample and pure water for domestic purposes is probably the most important health service. The improvement in public health resulting from the provision of adequate water in accordance with certain defined standards cannot be measured in terms of a rate per thousand gallons, but if it could, it would show an ample return on the capital invested.

Secondary water is that water required for irrigation purposes, and tertiary water is defined as water used for mechanical and industrial purposes. The use of water for tertiary purposes has little or no legal status, a condition that has been brought about by the failure of modern water legislation to recognize the importance of the impact of the industrial revolution, and the consequent increase and redistribution of population.

The future urban, industrial and mining development of the Southern Transvaal and the Northern Free State

depends on the quantity of assured water made available in the Vaal River and the division of such water between urban, industrial and mining development, on the one hand, and irrigation on the other. These two major requirements cannot be separated into compartments; nor can they be divorced from one another: they are, in fact, com-



The controlled flow of water from the Vaaldam

plementary. In an over-populated world, the supply of food is of paramount importance, and industry should not be allowed to develop at the expense of food production to such an extent as to endanger our self-sufficiency and independence of external sources of supply.

The relation between urban, industrial and mining development and irrigation in the Vaal River basin must, however, not be considered on its own, but only in relation to the overall planning of the whole of the water resources of the Union. Little of the water of the Orange River, which discharges three times as much as the Vaal, can be economically used for industrial purposes. Many of the smaller rivers flowing into the Indian Ocean, however, can be used both for industry and irrigation, and particularly for those industries that serve an export market and should rightly be located near the coast.

The Vaal River, by reason of its flow, its comparatively low silt burden, the facilities for storage and the saline content of its water, lends itself to industrial development; it straddles the wide circle of gold mines, and prescribes their future economic progress; and it cuts across the rich deposits of coal which provide the cheap power so essential to industrial progress.

SAFEGUARDING UNION'S FUTURE PROSPERITY

Although the water resources of South Africa are limited, we are a long way from the final development of these resources. Provided that all the water is usefully used and so allocated as to permit irrigation, mining and industrial development to evolve on rational lines—not in the interests of any particular section of the community, but only in the best interests of the country as a whole—the future prosperity of the Union, in so far as it is dependent on the provision of water, can be safeguarded for many years.

In the future it may be necessary to return to the sea both for food and water; science has made the demineralization of sea water possible and atomic energy may make its distribution economical.

Inco's Creighton Concentrator

The important expansion programme of the International Nickel Company of Canada, which has already involved a capital expenditure of over \$100,000,000, was referred to in *The Mining Journal*, October 5. When this programme is completed in 1953, the company's underground mines will deliver 13,000,000 tons of ore per annum, as compared with 5,700,000 tons underground ore hoisted in 1950. Details were given of the new Creighton No. 7 Shaft and a brief reference was also made to the new 10,000 ton concentrator at Creighton. In the following article appears a more detailed description of this remarkable plant, including details of the conveyor system, of the crushing and grinding mills, of the flotation equipment and of the electricity supply system.

Extensive laboratory, pilot plant, and operational scale test work preceded the designing of International Nickel's new Creighton concentrator in 1948. Capacity of the mill was originally set at 6,000 tons, but before construction was completed, changing world conditions made it essential that this be increased; therefore, two weeks after the commencement of the Korean War, plans were altered to bring capacity up to 10,000 tons.

Constructed of steel, tile and concrete, the mill building's dimensions are 440 ft. long, 175 ft. wide, and 70 ft. high. It is laid out in three parallel sections: the bin aisle, 380 ft. x 54 ft.; the crushing and grinding aisle, 440 ft. x 60 ft.; the flotation aisle, 380 ft. x 60 ft., containing reagent storage and feeders and also the classifiers of the sand fill plant. Attached to the south-west corner of the building is the hoist house, 116 ft. long, 65 ft. wide, and 58 ft. high. In the north-west corner, immediately adjoining the crushing plant and towering 196 ft. high, is the handsome monolithic concrete headframe of No. 7 shaft. Well-lighted and ventilated, the new plant offers ideal working conditions.

Approximately one-quarter of the feed to the new mill is nonmagnetic ore, which is transported direct from Creighton's No. 5 shaft rockhouse by a semi-enclosed system of three conveyors with a total length of 3,600 ft. The 30 in. 6-ply belt has a speed of 400 f.p.m. and a rated capacity of 650 tons p.h. The second of two transfer

points in the conveyor system contains a 150 ton surge bin, equipped with variable speed feeders to control the rate of feed to the receiving belt at the mill. The ore from No. 5 shaft, 2in. material, enters the mill circuit at the second stage of crushing.

CRUSHING OPERATIONS

Ore from the caving operations in No. 7 shaft receives its primary crushing underground and is hoisted to a 700 ton dump pocket. Chain feeders deliver and control the rate of feed to two parallel crushing circuits. The ore passes on to a scalping screen. The oversize is reduced in two crushers set in series, a 7 ft. standard and 7 ft. heavy-duty short head. A screen eliminates the undersize ahead of the short head crusher. The feed flows by gravity through the plant, and no ore is circulated for recrushing. The crushing plant product is conveyed to the mill bins on a 42 in. conveyor 460 ft. long. This is separately housed and runs up the south side of the building at an angle of 15 deg.

The reinforced concrete mill bin is divided into four sections, each of 5,000 ton capacity. A four-way tripper, operating on a conveyor belt which runs the full length of the bin, prevents segregation of coarse and fines in distributing the feed to the four sections of the bin. The ore is weighed and automatically sampled before entering the bin.

Each of the four units in the grinding aisle consists of two trunnion-type overflow mills and one rake-type classifier. One of the mills is charged with rods and the other with balls. Each mill, 10 ft. 8 in. in diameter and 13 ft. long, is powered by an 800 h.p. synchronous motor and holds a 70 ton rod or ball charge. A present-day trend is reflected in this use of large-diameter rod mills to replace rolls as a final crusher.

The ore, drawn from the bin by variable-speed roll-feeders, is delivered to the rod mill of the grinding unit by means of a conveyor system. A scale automatically controls and registers the tonnage to the mill by regulating the speed of the roll feeders. Metered water to the grinding unit controls the grinding condition and, indirectly, the final size of the product. Crushed pulp from the rod mill, which uses rods up to 3½ in. in diameter, discharges into a sump. It is then pumped to the classifier, from which the rake sands flow by gravity to the ball mill. The comminuted product of the ball mill returns to the classifier. Overflow from the classifiers of the four grinding units is collected in a central sump and pumped to the flotation section of the plant.

FLOTATION SECTION

A bulk rougher concentrate ready for separation is produced by flotation. This is accomplished in 144 mechanical-type flotation cells arranged in six 24 cell banks. The flotation feed is delivered to a six-way distributor and then flows by gravity to each bank of cells. Flotation reagents are added to both the sumps and the cells, the feeders and head tanks being conveniently located on a floor overlooking the entire flotation circuit. Daylight has been eliminated and fluorescent lighting installed throughout. This improves conditions for visual observation of the flotation froth. The first 21 cells produce the bulk rougher concentrate; the product of the last three cells flows to a sump and returns to the flotation circuit as a control-circulating load.

The bulk concentrate is laundered into a sump from which it is pumped through an 8 in. wood stave line a distance of 7½ miles to the Copper Cliff concentrator. Here it is separated into its final products of nickel or copper concentrates. There are five relay pumping stations in this unique operation.

SAND PLANT

Flotation tailing is pumped to a three-way distributor which feeds three classifiers. The coarse fraction of the pulp, the rake sands, is piped directly underground to serve as backfill in the mine workings. The finer fraction, the classifier overflow, enters the final tailing sump. It is pumped through a 13 in. wood-stave line by way of three relay pumping stations to the tailing disposal area 4 miles distant. The sand plant may be partially or completely by-passed, with the flotation tailing going directly to the disposal area.

Water supply for the new Creighton mill is pumped through a 20 in. continuous wood-stave line from the Vermilion River, approximately 6 miles away. The pump installation at the river can deliver 3,500 g.p.m. at a nominal pressure of 10 lb. Booster pumps at the mill raise the pressure to 60 lb. for process water. A chlorinating unit on the line makes the supply potable.

DUST CONTROL

Dust from the primary and secondary vibrating screens and the crushers is piped by a system of ducts to a collecting unit. This consists of 20 standard 34 in. conical dust-collecting cyclones through which air is drawn at the rate of 62,000 cu. ft. per min. at 5 in. negative pressure. The dust is withdrawn from the bottom of the cyclones and pumped to the flotation circuit in the form of a sludge.

Total metal input to the mill is determined through automatic sampling of the feed by a line of two Vezin samplers, followed by a roll crusher and a Snyder sampler. Samples of tailing are assayed every hour, samples of concentrate every two hours. Per cent-solids and sizing analyses of the various mill pulps are made regularly for operating control. The mill is equipped with a completely modern sample room and laboratory.

Power for the 400 odd motors at the new mill is supplied from the Company's 60-cycle distribution system. Incoming power is at 44,000 volts and is transformed by a 15,000 k.v.a. transformer bank to 550 volts for use by the smaller motors. The motor control equipment is located centrally in switchrooms throughout the mill. Size of the motors varies from very small electric clock motors to the large 5,500 h.p. synchronous motor driving the No. 7 shaft hoist.

The hoist proper is driven by two 2,750 h.p. D.C. motors under amplitudyne control. Two 2,000 kW D.C. generators are direct-connected electrically to these motors and are driven by the 5,000 h.p. synchronous A.C. motor. Amplitudyne control permits operation of the hoist by push button from the loading pocket.

The 800 h.p. synchronous A.C. motors driving the rod and ball mills are started across-the-line on full voltage.

The mill change-house, located on the second floor and reached by a ramp, has 130 steel two-compartment lockers. There are 15 individual showers in the tile-lined group shower room. The floor is covered with mastic. The lockers, lavatories, and shower room are serviced by a ventilation system which exhausts the air through the roof.

REVIEWS

Rhodesian Mining Review Year Book, 1951.—*Edited by S. H. Ashworth. Published by The Rhodesian Technical Press, Ltd., 59, N.E.M. House, Eighth Avenue, Bulawayo. Pp. 148. Price 10s.*

The 1951 Edition of the *Rhodesian Mining Review Year Book* contains again a large amount of useful information pertaining to the increasingly important mining industry of the two Rhodesias. The first part of this *Year Book* contains extracts from the mining laws of Southern Rhodesia, an article expounding in simple form the main provisions of the Income Tax Consolidation Act, 1948, affecting mining operations, and Rates of Tax. This section is followed by several tables of statistics relating to the mining industry of Southern Rhodesia and by a table devoted to the mineral output of Northern Rhodesia. The concluding section entitled *Mines of Rhodesia*, gives details of producing mines completed from official sources. This publication also contains a "week at a glance" diary.

Background Data on Copper

The Copper Development Association of Kendall's Hall, Radlett, Herts., has performed a valuable service by issuing a useful booklet entitled "Copper, its Ores, Mining and Extraction," thus fulfilling a frequent request from teachers in technical schools, science masters, and students alike. It gives a concise description of the interesting sequence of operations through which copper ore must pass before commercial copper is obtained—from mining, dressing, through smelting and refining to fabricating.

The booklet contains chapters on, *inter alia*, Production and Consumption of Raw Copper; Distribution of Copper Ore; Chief Types of Copper Ores, and Copper Mines of the British Empire. The mining of copper ores receives attention and there are useful sections on ore dressings, smelting, refining and manufacturing processes as well as a list of available C.D.A. publications.

Johnson Matthey Services

A beautifully produced illustrated brochure, which has just been published by Johnson, Matthey and Co., Ltd., Hatton Garden, London, E.C.1, describes the Johnson Matthey Services in the refining of gold, silver, platinum. It begins with a brief historical section which states that the activities of the company have developed from the original business of assaying precious metals, dating from the early eighteenth century. As long ago as 1817, Percival Norton Johnson, a grandson of the original John Johnson, had established a reputation for the high accuracy of his assays, and had set up a small gold and silver refinery in Hatton Garden. From that time onwards, one of the company's major services to industry and commerce had been the purchase and treatment of ores, concentrates and bullion containing gold, silver or the platinum metals, either for marketing as refined metal or for its own use as the basis of its manufactured products.

Next, the brochure emphasizes that although certain of the larger gold and silver mining enterprises throughout the world operate refineries to handle their own output, there is still a large part to be played by an independent refinery closely associated with the financial centre of London. The Johnson Matthey refineries—the largest of their kind in Europe and probably the most comprehensive in the world—fulfil this function.

In producing from crude materials marketable bars of gold and silver, stamped with the company's name, and with an assay that is accepted throughout the world, it may well claim to constitute an essential link in the mechanism of international finance, between the mines on the one hand and the Bank of England, the London bullion market and Government mints on the other. The accuracy and reliability of Johnson Matthey's service in this direction were recognized nearly a century ago by its appointment as Official Melters, Refiners and Assayers to the Bank of England and the Royal Mint—appointments it still holds to-day.

The production and refining of platinum and the platinum group metals—palladium, iridium, rhodium, osmium and ruthenium—were first undertaken early in the nineteenth century by Johnson, and were further developed in later years by his junior partner, George Matthey. For their work in metallurgy, both men were elected Fellows of the Royal Society.

The alloying and fabrication of precious metals also formed one of Johnson Matthey's earliest activities, but during the past twenty-five years resources for their melting, casting and working as well as for the production of a wide range of manufactured forms in these and other metals required by the industries served have been greatly enlarged. To the user of precious metals an important consideration is the disposal of his residual materials to the best advantage and the treatment of all types of industrial waste containing these metals, to ensure the recovery of maximum values, is a further important service.

GOLD AND SILVER REFINING

The refining of gold, silver and platinum is then briefly dealt with. As regards gold, bullion received from the mines varies considerably in purity, although generally it is from 80 to 90 per cent gold, the remainder consisting of silver, copper and other base metals, with, in some cases, small amounts of the platinum metals. However, bullion containing as little as 5 per cent—or even less—of gold is frequently dealt with. The authors of this most interesting brochure state that normally, the gold is refined to 99.6 per cent or over, but a purity of 99.99 per cent can be achieved by a further refining treatment.

Formerly, the electrolytic method of refining was

employed and, for many years, the company's electrolytic gold refinery was the largest in the world, dealing with the entire output of the Rand goldfields. This was replaced, in 1932, by a chlorine refinery, having a capacity of 400,000 ounces per week.

As in the case of the gold, much of the silver received from mines and smelters is relatively impure and contains gold, copper, lead, zinc, selenium, tellurium and other base metals. Many types of silver-bearing mining by-products and residues are also received and are treated for the recovery of their constituent metals.

Apart from newly-mined silver, the Johnson Matthey silver refinery, which has a capacity of 1,500,000 ounces per week, receives a steady flow of secondary silver in a multitude of forms and conditions. This ranges from the complete coinage of a country that has demonetized its silver—the British silver coinage is now in course of treatment—to industrial scrap and waste from metal working operations.

COMPANY'S LEADING ROLE IN PLATINUM DEVELOPMENT

The principal supplies of platinum and other platinum group metals handled by the company to-day are derived from South Africa, but for many years prior to the first World War it played a leading part in the refining and marketing of the Russian output of platinum, which up to that time represented some 85 per cent of world production. When supplies from this source diminished, it became associated with the development of platinum mining in Colombia. For the period 1914-18, the company was appointed by the Government as sole agents and distributors for platinum. After the war, in 1925, large deposits of platinum minerals were discovered in the Rustenburg and Lydenburg districts of the Transvaal and Johnson Matthey's metallurgists developed and put into operation methods for the extraction of platinum metals from these ores. These methods formed the basis for present large-scale activities in the smelting and refining of the platinum metals. Recently, the output of the mines has been greatly increased, and a new smelter and refinery that has more than doubled production of the company's platinum metals, has been erected.

In the South African ores, the platinum metals are associated with nickel and copper and come to this country either in the form of rich gravity concentrates or contained in a nickel-copper matte. The former are treated by a wet chemical process for the separation and refining of the individual platinum group metals, while the latter is subjected to furnace treatment for the separation of the nickel and copper. The nickel and copper are subsequently refined electrolytically to a high state of purity with recovery of the platinum group metals in the form of residues or slimes, which are then passed to the chemical process plant for treatment with the rich gravity concentrates.

Lastly, the brochure refers to the fact that in many types of industrial scrap and residues received for treatment, silver, gold and the platinum metals may often occur together and methods of smelting and refining must be adapted to suit the circumstances. The range and flexibility of the company's refining procedures enables it to handle any mixed or low-grade material containing precious metals in recoverable quantities. These include rich slags, mattes, residues and metallurgical products of all kinds, frequently with one or other of the base metals as the predominant constituent. Long experience and continued research in the smelting and refining of the precious metals ensure both maximum recovery of all valuable constituents of the materials treated and the attainment of the highest degree of purity in the refined metals.

Machinery & Equipment

The Victor Force Feed Mechanism and Quick Setting Extensible Prop

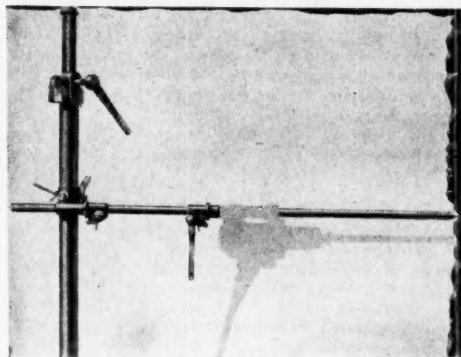
The Victor Force Feed Mechanism has been designed by Victor Products (Wallsend) Ltd., Wallsend-on-Tyne, to permit Victor compressed air and electric stone drills to tackle the hardest rock.

According to a new leaflet recently issued by the company, the essential requirement of any mechanism designed to keep rotary machines up to their work when drilling, is a minimum of weight, with simplicity in operation and the Force Feed Mechanism, details of which appear below, is stated to have been designed to provide these features.

The prop clamp easily slides over the Victor quick setting prop and is quickly locked in any position. The feedbar prop attachment fits to the prop clamp and a quick release nut locks it in position. A 7 ft. length of feedbar slides through the feedbar prop attachment and thus can be set with the spring loaded point up against the working face. It is then firmly locked by a ratchet mechanism, bearing against the feedbar prop attachment. Releasing the ratchet mechanism the feedbar can at once be moved back and readily adjusted to a new position. Means are also provided to enable drill to be instantly swung out of position for insertion of longest drill rod.

The Victor drill is force fed by a second ratchet operating on the feedbar. Quick release features again permit a rapid return movement. Both ratchets are operated by removable ratchet handle and the whole mechanism (which weighs 52 lb.) is claimed to be well within the capacity of one man to handle.

The Victor Quick Setting Extensible Props, referred to above, is said to meet the need of a variety of applications underground for a simple quick-setting prop, light in weight, yet robust in construction and capable of being handled and operated with the minimum of labour. It is available in three lengths covering the range 5 ft. to 7 ft., 7 ft. to 9 ft. and 9 ft. to 11 ft. The weight (in lb.) is 80, 92 and 104, respectively, and dia. of the prop is 3 in.

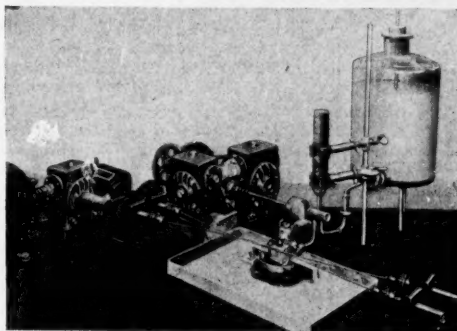


Application of the Force Feed Mechanism and Quick Setting Extensible Prop designed by Victor Products (Wallsend) Ltd.

Extensions are hand racked in and out by a removable ratchet handle, thus giving the essential security against unauthorized operation. Each prop is capable of carrying, with an ample margin, a load of 3,000 lb. and is designed to withstand, without permanent distortion, the maximum bending moment capable of being exerted by the full range of Victor compressed air and electric stone drills.

Investigating Underground Corrosion in South African Gold Mines

The accompanying photograph (which is reproduced by courtesy of the Institute of Certificated Engineers, South Africa) illustrates an interesting series of laboratory tests recently carried out by Anglo-Transvaal Consolidated Investment Co., Ltd., as part of a general investigation of underground corrosion in South African gold mines. This particular apparatus was used to measure the nature and



Three Radicon worm reducers, made by David Brown Gears (London) Ltd., used for measuring the extent of corrosion in wire ropes in South African gold mines and for checking the effectiveness of various types of lubricants

extent of corrosion in wire ropes and to test the effectiveness of various types of lubricants in checking this deterioration.

Main items of apparatus used were a driving motor; a revolution counter; three David Brown Radicon worm reducers; a Marriotte bottle containing a brine solution; an atomizer controlling air supply, and two test wires.

For the purpose of the experiment, the two wires were rotated about their own axes in opposite directions and at different speeds (37 r.p.m. and 20 r.p.m.). This was achieved by transmitting the main drive through a 1½ in. (40 : 1 ratio) Radicon reducer and a set of spur gearing to two chucks in which the ends of the wires were held.

Rotation of these chucks induced high unit pressures between the wires, thus reproducing the rubbing together of individual strands of wire with continual breaking and repairing of the oil film, as experienced under actual working conditions.

Also connected to the main drive through a set of intermediate spur gears were two more small Radicon worm reducers, a 1½ in. (20 : 1 ratio) unit and a second 1½ in. unit, in this case of 50 : 1 ratio.

Reduction of the drive from the second of these two inter-connected Radicons was carried a stage further by another set of gearing to achieve a very slow final drive to the brine supply cock, which was required to rotate only once every 50 minutes. During this time a measured quantity of 20 per cent brine solution, equivalent to the high saline content of water encountered in South African mines, was sprayed over the wires for three minutes, while air was directed on the wires continuously from an atomizer nozzle.

Metals, Minerals and Alloys

Reacting apparently to nation-wide complaints that the ceiling prices of copper, lead, zinc, etc., in the U.S. were too low, the O.P.S. has amended the controls law to permit processors and manufacturers to apply for higher maximum prices to be based on the prices existing up to July 26 last with subsequent increases or decreases to be taken into account. This concession in the matter of price appears in marked contrast to the U.S. Government's rigidity in respect of tin prices.

Copper.—There is no news of general interest with regard to copper. U.S. prices are unchanged and scrap continues very tight. Early last week the Hayden Smelter of the A.S. & R. in Arizona was closed down by a strike.

The Government is expected to make the biggest loan for mineral expansion since the war to assist the development of the San Manuel Copper Corporation—a Magma Subsidiary—some \$75,000,000 or more being spoken of. The mine is not expected to be in full production before about the end of 1955; the target is some 70,000 s.tons of refined copper yearly. The ore body is estimated to contain not less than 500,000,000 s.tons of 0.8 per cent metal. The San Manuel has been under development since 1944.

The Ministry of Supply has reduced the price of scrap by £8 a ton, with clean scrap at £202 a ton. U.K. stocks at the end of October were 122,808 tons against 132,249 at the beginning of the month; afloats were 29,627 tons; held abroad 17,727 tons. Consumption in October was 51,799 tons making 470,812 tons for the ten months (428,710 last year).

Lead.—With all their December lead intakes disposed of by producers, consumers are calling for stockpile lead to meet outstanding allocations. The release of 30,000 s.tons announced recently will, it is understood, be emitted at the rate of 10,000 tons a month in the first quarter of next year. The strike at the Herculeum smelter continues, but the mines are working and concentrates accumulating. Expectations of lower prices for Mexican lead appear to be growing. Sellers are prepared to dispose of January shipments at 21½c. and the Ministry of Supply is understood to have offered 19c. f.a.s. Gulf for new shipments for 1952.

U.K. stocks at the end of October were 47,322 tons against 43,894 at the beginning; afloats were 40,666; held abroad 16,149 tons. October consumption was 29,964 tons and for the ten months 289,872 tons.

Tin.—The Colonial Secretary, Mr. Oliver Lyttelton, has left Singapore for Hong Kong, but he expects to return there in about a week to finalize matters. Before leaving Singapore he made a broadcast in which he promised speedy action through overall direction of military and civil forces to deal with the immediate problem of security in the country. A welcome note in the broadcast was the indications of more sympathetic handling of the Chinese element in the country including the creation of a Chinese Home Guard and the admissibility of non-English speaking Chinamen to naturalization in the colony. The Chinese constitute about half the population of the Federation and the Colony and it is to be hoped that this new policy will contribute to the mutually friendly relations between them and the Malays which existed almost up to the beginning of the last war.

The directors' report on the year's working of Géomines, the largest producer in the Belgian Congo, which appears

elsewhere in this issue indicates at once the decline in output and its chief reason, viz., concentration on development for future operations. The Congo mines were pushed for production during the war and a period of recuperation has been indicated for some time past. Unlike Malaya, however, the Congo managements are not hampered by lack of fresh ground to prospect and develop or by conditions of insecurity making such work too dangerous to be undertaken.

The output of Indonesia in November is reported as 2,702 tons, bringing the total for 11 months to 28,014 tons compared with 29,269 for the same period last year. Production of the Longhorn Smelter in November was 1,806 tons, and for the 11 months to the end of November, 29,116 tons against 29,131 tons in the same period last year. Exports of Straits tin in November were 6,073 tons, (4,884 in October); again there were no shipments to the U.S. but 2,861 tons went to Europe, 1,688 to the U.K., 753 to British areas, and 771 tons elsewhere.

In the 11 months of this year the U.S. took only 2,566 tons against 42,915 tons in the same period last year. The U.S. Bureau of Mines gives the total published stocks of tin in the country as 52,178 tons at the end of August, compared with 72,882 tons at the beginning of the year.

Increased attention is being paid by U.S. tinplaters to reducing the use of tin in tinplates. Savings of up to 50 per cent of tin are claimed with the dual differential process.

U.K. stocks at the end of October were 1,793 tons against 2,003 at the beginning. October consumption was 2,177 tons and for the ten months 20,153 tons (17,283 last year).

Zinc.—Zinc has been rather featureless this week, sellers in the U.S. having disposed of their December intakes. Consumption restrictions in addition to smaller stockpile shipments have enabled smelters to replenish their stocks. November production was 79,376 s.tons compared with 79,432 a month earlier. Shipments broadened for the third consecutive month and totalled 77,419 tons comprising 70,084 domestic, 4,517 export and drawback, and 2,818 for Government account. October's shipments were 73,583 including a revision in domestic to 68,365, export and drawback 2,167, and Government account (revised) 3,051. Unfilled orders at the end of November reached 67,268 tons compared with 66,293 tons at the end of October. Consumption as computed by the U.S. Bureau of Mines for the first seven months was 515,022 s.tons (536,822 in the same period last year).

U.K. stocks of slab zinc at the end of October were 35,684 tons against 35,528 at the beginning. Afloats were 14,944 and held abroad 6,177 tons.

Aluminium.—Austrian production this year is expected to reach 26,000/27,000 tonnes. From the Ranshofen and the Salzburg works at Lende, Austria at present has to import all the bauxite needed which in the first nine months of the year totalled 36,272 tonnes. There are no new aluminium plants in the country. This week the Kaiser Aluminium plant at New Orleans is due to make its first boring of metal. The whole project is due for completion in the middle of 1953 and has a predicted capacity of 200,000 s.tons a year, and will bring the company's total capacity at that period to 395,000 s.tons yearly.

Opposition to the Anaconda copper entering the field of aluminium production has developed from the Departments of the Interior and of Justice, and though the defence organizations favour permission being given, it is thought likely that the proposal may be dropped. The French winter price has been raised to Frs. 200,000 per tonne without taxes.

Asbestos.—Les Amiantes de France is starting the working of what is described as a rich asbestos deposit in the French Alps near the Italian border estimated to contain 8,000,000 cubic metres. American capital and French Government funds are invested in the company which hopes to produce some 15 to 20 per cent of the needs of France. Last year French consumption was reported as around 40,000 tonnes.

Dominion Asbestos Mines are planning a new asbestos mill at St. Andrien, Quebec; 23,000,000 tons are said to be proved on the property and the fibre is high quality.

Cobalt.—Cobalt consumption in the U.S. in August was the heaviest for the year being 25 per cent greater than in July, while sales of metal increased by 81 per cent. Imports this year have increased and for the first eight months were 4,023,652 lb. of metal from the Congo, from Belgium 2,112,925 lb., and from Canada 123,314 lb. Of white alloy the Congo supplied 3,687,990 lb., while Belgium shipped 298,200 lb. of oxide, and Canada 4,750 lb. Canada also supplied 261,634 lb. in concentrates.

Manganese.—Considerable expansion in production is reported from Angola where the Companhia de Manganês exploited 36,000 tons of high-grade ore in the first nine months of the year, chiefly to the U.S. It is believed that the mines can effect a much larger output if shortage of native labour and adequate transport can be surmounted. Production next year is forecast as likely to average 5,000 tons of ore monthly.

Molybdenum.—The tungsten-molybdenum committee of the I.M.C. have found it possible to increase the fourth quarter world allocation of 4,720 tonnes of molybdenum by 174 tonnes, this will be derived principally from outside the U.S. Of the additional allocation 116 tonnes are to go to the U.S., 17 to Britain and minor amounts to other countries.

Quicksilver.—The U.S. is believed to have purchased some 12,000 flasks of quicksilver from Italy at a price below the \$200 quoted in Spain.

Tungsten.—The Tungsten-Molybdenum Committee has announced an increase of 24 tonnes in the tungsten allocation for the current quarter. The original allocation was 3,245 tonnes of concentrates and 200 of primary products. The committee is expected to announce a long-term programme of international purchase and distribution of tungstiferous materials in the near future.

This programme has been approved by the sub-committee and forwarded to member governments but its general acceptance seems doubtful. Under it consumers would pay \$35-\$60 per unit.

Everybody, including the Ministry, is awaiting the outcome of the Washington International Materials Conference and meanwhile the Government's agents are out of the market. A ceiling price of 480s. per s.ton unit f.o.b. is being talked about and a new floor price of 280s. is under consideration as well. In the meantime the price may be called unchanged at 510s./520s. nom. per unit.

The London Metal Market

(From Our Metal Exchange Correspondent)

The tin market continues very sensitive to rumour and following a report from Singapore published in a London newspaper on the 6th instant, that America was making enquiries there in regard to the purchase of 30,000 tons in 1952, the downward trend was halted and the market here staged a recovery to about £940 per ton for the three months position. From this point there has again been a sagging tendency.

On Wednesday it was reported that a spokesman of the

Reconstruction Finance Corporation speaking of the recent visit to Malaya of the American Government Tin Mission, said that the producers had failed to convince them that the cost of production justified the present price of tin. He is said to have denied the report that the United States were considering the purchase of 30,000 tons of Malayan tin during 1952, but added that they would buy very much more if the price were not exorbitant. In conclusion he said that the United States might resume the buying of tin if the price falls to about \$1 per lb. delivered New York.

Continental enquiry has been slow and very little business has been done during the week.

The backwardation is again showing a tendency to narrow following the calling off of the "go slow" action by workers in the London Docks.

On Thursday the official close on the tin market was: Settlement price £930, Cash Buyers £927 10s., Sellers £932 10s.; Three months' Buyers £917 10s. Sellers £920. In the afternoon the market was steady. Turnover for the day was 85 tons. Approximate turnover for the week was 640 tons.

The Eastern price on Thursday morning was equivalent to £921 15s. per ton, c.i.f. Europe.

Iron and Steel

The year is now rapidly drawing to a close without any definite promise of improvement in the available supplies of iron and steel. Production capacity has been increased and was never so great as it is to-day. But this capacity cannot be fully enjoyed because of the lack of raw materials. Hence outputs are on a reduced scale at a time when home industries are starving for supplies and overseas orders are being turned down.

One encouraging feature is the rising trend of coal production. Fuel stores are better than had been anticipated, but the holidays are at hand and fuel stores will have to be raided during this period to keep the blast furnaces in continuous operation.

Home ore production is steadily increasing and imports of foreign ore have been accelerated to such an extent that the total receipts for the year are now expected to slightly exceed the figures for 1950. The scrap situation, on the other hand, is becoming desperate. Imports this year are not expected to reach 600,000 tons compared with 1,900,000 tons in 1950 and home supplies of scrap have not increased to any appreciable extent although steel makers mention that more scrap could be obtained if steel users, great and small, would be more zealous in clearing out obsolete plant and equipment.

Preparations are now well advanced for the restoration of controlled distribution on and after February 4. Consumers are pressing for maximum deliveries before that date and they have especial reasons for doing so as uncompleted orders will thereafter require re-authorization. It is obvious that a large proportion of these orders will be carried forward into next year and will not be executed before the operative date of the new Order. The sheet trade of course is unaffected. Distribution of light sheets is already controlled and in this branch of the steel trade famine conditions prevail.

There is no news regarding prices, but it is generally assumed that there will be an upward revision of the maximum permitted prices before the new controls are introduced. This is the inevitable consequence of prospective advances in coal prices and railway freight charges. Only the amount of the rise in iron and steel prices seems to be in doubt, and it would create no surprise if scrap prices were also advanced, since there is still a very wide gap between British price levels and realized values of foreign material.

Coal

The Ministry of Fuel and Power reports the output of coal for the week ended December 8 as 4,732,900 tons, as compared with 4,603,200 tons in the previous week. Distributed stocks for the week ended December 1 were 17,174,000 (17,160,000). The number of men on colliery books for the week ended December 1 was 695,800 (695,300.)

DECEMBER 13 PRICES

COPPER

Electrolytic... .. £227 0 0 d/d

TIN

(See our London Metal Exchange report for Thursday's prices)

LEAD

Soft foreign, duty paid £175 0 0 d/d

Soft empire, including secondary lead £175 0 0 d/d

English lead £176 10 0 d/d

ZINC

G.O.B. spelter, foreign, duty paid £190 0 0 d/d

G.O.B. spelter, domestic £190 0 0 d/d

Electrolytic and refined zinc £194 0 0 d/d

ANTIMONY

English (99%) delivered,

10 cwt. and over £365 per ton

Crude (70%) £290 per ton

NICKEL

99.5% (home trade)... .. £454 per ton

OTHER METALS

Aluminium, £124 per ton.

Bismuth, 28s. lb. Palladium, £8 10s. oz.

Cadmium, 18s. 9d. lb. Platinum (scrap), £33.

Chromium, 6s. 3d. lb. Platinum, £27/£33 5s. nom.

Cobalt, 17s. 6d. lb. Rhodium, £45 oz.

Gold, 248s. f.o.z. Ruthenium, £30 oz.

Iridium, £65 oz. nom. Quicksilver, £73 10s./£74

Magnesium, 1s. 6d. - 2s. lb. ex-warehouse.

according to quantity. Selenium, 25s. nom. per lb.

Osmium, £35 oz. nom. Silver (bar), 77d. f.o.z. spot

and forward.

Osmium, £70 oz. nom. Tellurium, 19s. lb.

ORES, ALLOYS, ETC.

Bismuth 30% 12s. 9d. lb. c.i.f.

Chrome Ore— 40% 14s. 9d. lb. c.i.f.

Rhodesian Metallurgical (lumpy) £13 per ton c.i.f.

" " (concentrates) £13 per ton c.i.f.

" " Refractory £12 12s. per ton c.i.f.

Baluchistan Metallurgical ... £13 18s. 6d. per ton c.i.f.

Magnetite, ground calcined... £26 - £27 d/d

Magnetite, Raw ... £10 - £11 d/d

Manganese, Best Indian (Nominal)

Molybdenite (85% basis) ... 103s. 1½d. per unit c.i.f.

Wolfram (65%), U.K. ... 515/525s. nom. c.i.f.

Tungsten Metal Powder ... 35s. nom. per lb. (home)

(for steel manufacture)

Ferro-tungsten ... 33s. nom. per lb. (home)

Carbide, 4-cwt. lots ... £30 3s. 9d. d/d per ton

Ferro-manganese, home £41 8s. 2d. per ton

Ferro-manganese, export Nom.

Brass Wire ... 20s. 7½d. per lb. basis.

Brass Tubes, solid drawn ... 2s. 1d. per lb. basis.

South African Minerals Output (September).—Gold, 952,458 f.o.z.; silver, 9,125 f.o.z.; diamonds (August), 225,044 ct.; coal, 2,635,011 s.tons; copper, 1,144 s.tons (99.22%); 55 s.tons in matte and concentrates; tin, 116 s.tons (66.79%); asbestos, 9,835 s.tons; chromite, 51,156 s.tons (44.18%); manganese, 71,221 s.tons (40.41%); lead, 73 s.tons (77.14%).

Southern Rhodesia Mineral Production—September.—During September, Southern Rhodesia produced the following minerals: Gold, 40,098.11 f.o.z.; silver, 6,395.32 f.o.z.; coal, 218,317 tons; antimony ore, 4.5 tons; arsenic, 12.5 tons; asbestos, 6,299.64 tons; copper, 19.23 tons; copper concentrates, 12 tons; chrome ore, 16,660.39 tons; fireclay, 100 tons; iron ore, 4,986 tons; iron pyrites, 2,905 tons; kaolin, 1,003 tons; beryllium ore, 126.73 tons; limestone, 16,134.66 tons; magnetite, 1,600 tons; mica (block), 7 tons, 35 lb.; mica (waste), 50 tons; lithium, 110 tons; tin concentrates, 9.78 tons; tungsten concentrates, 15.74 tons. In the first nine months of 1951, mineral production in Southern Rhodesia was valued at £11,102,652, the total for gold being £4,501,663 and that for base minerals £6,581,934.

Mining Men and Matters

Mr. W. M. Clark has been appointed a director of Nchanga Consolidated Copper, Rhodesia Broken Hill Development, Rhodesia Copper Refineries and Rhokana Corporation.

Mr. J. B. Davis has been elected a director of Gold Fields Australian Development, in place of Mr. W. H. Geikie, resigned.

Mr. H. Dudley has joined the staff of the Ukwa Mine at Gudma, India.

Mr. N. W. Griffin has been promoted to the position of assistant works manager, Eastern Smelting Co., Penang.

Mr. G. L. Hatherley has taken up an appointment at Kitwe with the Rhokana Corporation.

Mr. D. W. Hopkins has resigned his position as lecturer in the Metallurgy Department of the University College of Swansea to become works manager for Western Metallurgical Industries, Ltd., Neath.

Mr. C. J. Irving has been elected president of the Chemical, Metallurgical and Mining Society of South Africa, for the year 1951/52.

Mr. P. M. Johnstone has joined the staff of Bulolo Gold Dredging, New Guinea.

Mr. J. Kruttschnitt has been elected president of the Australasian Institute of Mining and Metallurgy, an office he held in 1939.

Mr. H. A. Kursell has retired from the American Smelting and Refining Co., and is proposing to set up a private consulting practice.

Mr. E. Lee has left the Sunace gold mine and has joined the staff of Motapa.

Mr. H. J. Luckhoff has been transferred to Western Reefs as underground manager.

Mr. F. Bice Michell has been appointed Vice-Principal of the Camborne School of Mines in succession to the late Mr. A. V. Paull. Mr. Bice Michell will remain head of the school's Mineral Dressing Department.

Mr. D. A. C. Purser has taken up his appointment as mineral development officer, Swaziland Geological Survey.

The Institution of Mining and Metallurgy has announced that at the general meeting to be held on December 20, the paper to be submitted for discussion will be "Mining Policy in French Overseas Territories," by M. Fernand Blondell, who expects to be present at the meeting to introduce his paper.

Business Items

The death is announced of **Mr. W. J. Byrne**, chairman, principal board of directors, of the Commercial Bank of Australia.

Mr. J. F. Cade and **Mr. B. F. Macdonald** have been appointed general managers of Barclay's Bank (Dominion, Colonial and Overseas).

Mr. J. C. Carr has been appointed to the Board of the Summerson Group of Companies.

Mr. F. J. Erroll and **Mr. R. T. Outen** are to join the board of Ashanti Goldfields Corporation.

Mr. Roy H. Glover has been appointed to the Vice-Presidency and General Council of the Anaconda Copper Mining Company.

Mr. T. C. James has been appointed chairman of the Wolverhampton Metal Company.

The death is announced of **Mr. E. Percy Jones**, chairman of William Jones, Ltd.

Mr. Vaughan Pendred has been appointed a director of Head, Wrightson.

Sir David Waley has been elected a director of Taquah & Abosso Mines.

Earl de la Warr has resigned from the board of Brush Electrical Engineering on his appointment as Postmaster-General.

Mr. FitzHerbert Wright has been elected a director of Minworth Metals in place of Mr. Hugh Wylie, resigned.

The Australia and New Zealand Bank has announced the opening of a new branch at Moonah, Hobart, Tasmania.

The National Bank of India has opened a branch at Thika, Kenya.

The Mining Markets

Although tighter credit restrictions, either actual or expected still hangs over the market, the opening of the new three week account on Wednesday extending over the Christmas holidays saw an easing of previous selling pressure and a firmer tendency to support undated stocks especially those which had suffered most in the recent downward movement. Indeed, most sections of the House on Wednesday recorded small gains but this was as much due to the better sentiment prevailing as to any noticeable increase in demand.

Kaffirs, which have been a weak market lately, went into the new account period maintaining the steadier conditions observed at the close of the old one. This was more applicable to developers than to established producers which remained dull. There was nothing particular to account for this as the dividend declarations from the Consolidated Gold Fields and Anglo Transvaal groups were, in the majority of cases, up to expectations. Venterspost suffered most of those companies reducing their dividend payments, falling $\frac{1}{2}$ to $\frac{1}{4}$, but Luipaards Vlei, after dropping to 17s. 10d. following the cut in its distribution recovered this loss the following day. What firm issues there were centred around Brakpan, Vlakfontein and Robinson Deep.

Nigel Gold has announced that no final dividend will be paid for the current year owing to the urgent necessity for conserving resources to meet the expenditure involved in exploration work on the Kimberley Reef and the recently acquired New Nigel claims. Thus the comparative figures are $\frac{2}{3}$ per cent for 1951 against 12 per cent in 1950.

In O.F.S. shares, the recovery which began on Tuesday continued. "Geoffries" and St. Helena were good markers, the Freddie issues also showed improvement, while Western Holdings rallied to 3 5/32 on more reasoned con-

siderations of their capital proposals. Other good spots in this list were the Presidents Steyn and Brand and Middle Wits which went ahead to 20s. 3d.

Outstanding among base metals was Consolidated Murchison which gained $\frac{3}{16}$ to $\frac{5}{8}$ on Wednesday following the bumper dividend payment of 24s. per share. This more than met market expectations and brought the total payments for the year to 800 per cent compared with 140 per cent previously. Elsewhere issues in this section were irregular and over the week tended to be uniformly lower.

Tins in the earlier part of the week followed the general downward trend but improved later; Siamese Tin and Bangrin being good counters. Ayer Hitam also improved.

In Australian lead/zincs there was a late round improvement. Consolidated Zinc was in demand, Mt. Isa came in for attention and North Broken Hill, New Broken Hill and Broken Hill were all firmer.

Diamond shares were irregular and small selling pressures at advanced levels left little change on balance.

Oil shares were an active market when the new account period was opened. Anglo Iranians went higher, while gains were recorded by Shells, Burmas, British Borneos and Wakefields. Ultramar's were inclined to be erratic, but closed finally $\frac{1}{4}$ d. better at 29s. $\frac{1}{4}$ d. Apex Trinidad however, were the centre of interest and made a sharp recovery following the announcement of the dividend. This was increased to 2s. tax free against 1s. 9d. a year ago by the payment of a final of 1s. 6d. Profit for the year to September 30 was £530,733 against £669,142 struck after providing for all expenses and taxation. This is a better result than it appears to be at first sight, as there were credit adjustments in respect of oil deliveries in prior years. These credit adjustments swelled the previous year's profit figures by £201,971, after tax, and if excluded comparative profits would reveal that this year's earnings showed an appreciable advance.

FINANCE	Price	+ or -		Price	+ or -	
	Dec. 12	on week		Dec. 12	on week	
African & Euro...	3 1/2	-	Alpha F.S.A.	8/-	-	
Anglo American Corp.	7 1/2	-	Blinkport	19/4	-	
Anglo-French	21/9	-	Central Mining F.S.	4 1/4	-	
Anglo Transvaal Consol.	37/6	-	Freddie's	8/6	-	
Camp Bird	12 1/4	-	Freddie's N.	8/6	-	
Central Mining (21 shrs.)	39 1/4	-	F.S. Geduld	8/6	-	
Consolidated Goldfields	48/9	-	Geoffries	20/-	-	
Consol. Mines Selection	31/3	-	Harmony	23/6	-	
East Rand Consols.	3/6	-	Jodavah Estates	8/-	-	
General Mining	5 1/2	-	Widdowits	19/6	-	
H.E. Prop.	35/-	-	Ofsets	38/9	-	
Henderson's Transvaal	13/9	-	President Brand	17/3	-	
Johannes	3 1/2	-	President Steyn	16/3	-	
Rand Mines	6 1/2	-	St. Helena	21/3	-	
Rand Selection	41/3	-	U.F.S.C. & G.	7/9	-	
Union Corporation	8 1/2	-	Virginia Del.	7/6	-	
Vereeniging Estates	5 1/2	-	Virginia Ord.	10/10 1/2	-	
Wits	32/6	-	Welkom	31/3	-	
West Wits	40/-	-	Western Holdings	3 1/2	-	
RAND GOLD			WEST AFRICAN GOLD			
Blyvoor	42/3	-	Amalgamated Banket...	2/-	-	
Brakpan	17/9	-	Ariston	6/9	-	
City Deep	23	-	Ashanti	28/-	-	
Consol. Main Reef	2 1/2	-	Bibiani	8/-	-	
Crown	4 1/2	-	Bremang	3/-	-	
Daggas	3 1/2	-	C.C. Main Reef	3/4	-	
Dominion Reefs	2/3	-	C.C. Selection Trust	7/3	-	
Downfontein	32/6	-	Konongo	3/4	-	
Durban Deep	32	-	Kopeng	4/3	-	
E. Daggas	23/9	-	London & African Mng.	1/9	-	
E. Geduld (4¢ units)	46 1/10	-	Lyndhurst Deep	1/6	-	
E. Rand Prop.	3 1/2	-	Maru	10/10 1/2	-	
Geduld	7 1/2	-	Nar	6 1/2	-	
Grootvlei	35 1/2	-	Taguab & Abosso	6/-	-	
Libanon	14/3	-				
Luipaards Vlei	18/6	-	AUSTRALIAN GOLD			
Marievale	22/9	-	1/- Boulder Perseverance	3/-	-	
Modderfontein B.	4/6	-	Gold Mines of Kalgoorlie	13/-	-	
Modderfontein East	32/6	-	Great Western Consol.	5/7 1/2	-	
New Kleinfontein	30 1/2	-	Gold West. Consol.	5/7 1/2	-	
New Pioneer	16/-	-	Laurel View and Star	19/6	-	
Randfontein	16/9	-	Mount Morgan	18/-	-	
Robinson Deep	13/6	-	North Kalgoorlie	8/-	-	
Rose Deep	33/9	-	Parraga	9d	-	
Simmer & Jack	6/-	-	Sons of Gwalia	10/9	-	
Springs	8 1/4	-	South Kalgoorlie	8 1/2	-	
Sulu Nigel	17/3	-	Western Mining	8/-	-	
Van Dyk	13/6	-	Wiluna	13/-	-	
Venterspost	23/9	-				
Vlakfontein	17/3	-	MISCELLANEOUS GOLD			
Vogelstruisbuit.	27/9	-	Can and Motor	39/4 1/2	-	
West Driefontein	6	-	Champion Reef	9/-	-	
W. Rand Consolidated	43 1/2	-	Falcon Mines	9/3	-	
Western Reefs	39 1/4	-	Globe & Phoenix	24/-	-	

MISCELLANEOUS GOLD (contd)	Price	+ or -		Price	+ or -	
	Dec. 12	on week		Dec. 12	on week	
G.F. Rhodesian	7/3	-	G.F. Rhodesian	7/3	-	
London & Rhodesian	5/10 1/2	-	London & Rhodesian	5/10 1/2	-	
Murchison	2/6	-	Murchison	2/6	-	
Mysore	5/3	-	Mysore	5/3	-	
New Guinea	1 1/2	-	New Guinea	1 1/2	-	
Rundvrog	7/-	-	Rundvrog	7/-	-	
Seacrest	3/3	-	Seacrest	3/3	-	
Oroville	1/6	-	Oroville	1/6	-	
St. John d'El Rey	37/6	-	St. John d'El Rey	37/6	-	
Zams	36/3	-	Zams	36/3	-	
DIAMONDS			DIAMONDS			
Anglo American Inv.	5 1/2	-	Anglo American Inv.	5 1/2	-	
Castles	34/6	-	Castles	34/6	-	
Cons. Diam. of S.W.A.	4 1/2	-	Cons. Diam. of S.W.A.	4 1/2	-	
De Beers Defd. Bearer	48	-	De Beers Defd. Bearer	48	-	
De Beers Pfd. Bearer	15 1/2	-	De Beers Pfd. Bearer	15 1/2	-	
COPPER			COPPER			
Chartered	68/9	-	Chartered	68/9	-	
Indian Copper	3/10 1/2	-	Indian Copper	3/10 1/2	-	
Messina	5 1/2	-	Messina	5 1/2	-	
Nehema	7 1/2	-	Nehema	7 1/2	-	
Rhod. Anglo-American	65/-	-	Rhod. Anglo-American	65/-	-	
Rhodesian Selection	17 1/4	-	Rhodesian Selection	17 1/4	-	
Rhokana	22 1/2	-	Rhokana	22 1/2	-	
Rio Tinto	21 1/2	-	Rio Tinto	21 1/2	-	
Roan Antelope	13 1/2	-	Roan Antelope	13 1/2	-	
Selection Trust	9d	-	Selection Trust	9d	-	
Tanks	57/xd	-	Tanks	57/xd	-	
Thariss Sulphur Br.	51/3	-	Thariss Sulphur Br.	51/3	-	
TIN (Eastern)			TIN (Eastern)			
Anglo-Burma	2/6	-	Anglo-Burma	2/6	-	
Ayer Hitam	27/-	-	Ayer Hitam	27/-	-	
Bangrin	34	-	Bangrin	34	-	
Gopeng	15 1/2	-	Gopeng	15 1/2	-	
Hongkong	9/6	-	Hongkong	9/6	-	
Ipo	26/3	-	Ipo	26/3	-	
Kamunting	16/3	-	Kamunting	16/3	-	
Kepong Dredging	12 1/4	-	Kepong Dredging	12 1/4	-	
Kinta Tin Mines	16/-	-	Kinta Tin Mines	16/-	-	
Kramat Pulai	4/3	-	Kramat Pulai	4/3	-	
Malayan Dredging	21/6	-	Malayan Dredging	21/6	-	
Pahang	15 1/2	-	Pahang	15 1/2	-	
Pengkalen	11/3	-	Pengkalen	11/3	-	
Petaling	14/6	-	Petaling	14/6	-	
Rambutan	16/3	-	Rambutan	16/3	-	
Siamese Tin	22/6	-	Siamese Tin	22/6	-	
Southern Kinta	15 1/2 xd	-	Southern Kinta	15 1/2 xd	-	
S. Malayan	28/6	-	S. Malayan	28/6	-	
S. Ironoh	21/6	-	S. Ironoh	21/6	-	
Sungai Kinta	21/3	-	Sungai Kinta	21/3	-	
Tekka Taiping	9/9	-	Tekka Taiping	9/9	-	
Tromoh	28/9	-	Tromoh	28/9	-	
TIN (Nigerian and Malayan)			TIN (Nigerian and Malayan)			
Amalgamated Tin	10/3xd	-	Amalgamated Tin	10/3xd	-	
Berat Tin	22/-	-	Berat Tin	22/-	-	
Bischi	4/3	-	Bischi	4/3	-	
British Tin Inv.	17/-	-	British Tin Inv.	17/-	-	
Ex-Lands Nigeria	6/3xd	-	Ex-Lands Nigeria	6/3xd	-	
Geevor Tin	14/6	-	Geevor Tin	14/6	-	
Gold & Base Metal	4 1/4	-	Gold & Base Metal	4 1/4	-	
Jantar Nigeria	7/3xd	-	Jantar Nigeria	7/3xd	-	
Los Tin Area	11/6	-	Los Tin Area	11/6	-	
Kaduna Prospectors	4/-	-	Kaduna Prospectors	4/-	-	
Kaduna Syndicate	5 1/2	-	Kaduna Syndicate	5 1/2	-	
London Tin	5/10 1/2	-	London Tin	5/10 1/2	-	
Ribon Valley	1 1/4	-	Ribon Valley	1 1/4	-	
United Tin	3/-	-	United Tin	3/-	-	
SILVER, LEAD, ZINC			SILVER, LEAD, ZINC			
Broken Hill South	52/-	-	Broken Hill South	52/-	-	
Burma Corporation	4 1/4	-	Burma Corporation	4 1/4	-	
Consol. Zinc	31/6	-	Consol. Zinc	31/6	-	
Lake George	22/6	-	Lake George	22/6	-	
Monat Isa	45/9	-	Monat Isa	45/9	-	
New Broken Hill	27/9	-	New Broken Hill	27/9	-	
Rhodesian Broken Hill	70/9	-	Rhodesian Broken Hill	70/9	-	
San Francisco Mines	18/9	-	San Francisco Mines	18/9	-	
Trepca	3/6	-	Trepca	3/6	-	
MISCELLANEOUS BASE METALS & COAL			MISCELLANEOUS BASE METALS & COAL			
Amal. Collieries of S.A.	55/-	-	Amal. Collieries of S.A.	55/-	-	
Associated Manganese	55/-	-	Associated Manganese	55/-	-	
Chinese Engineering	5/-	-	Chinese Engineering	5/-	-	
C.P. Manganese	45 1/2	-	C.P. Manganese	45 1/2	-	
Natal Navigation	5xd	-	Natal Navigation	5xd	-	
Wandie	28 1/2	-	Wandie	28 1/2	-	
Witbank Colliery	3 1/2	-	Witbank Colliery	3 1/2	-	
CANADIAN MINES			CANADIAN MINES			
Dome	33 1/2	-	Dome	33 1/2	-	
Hudson Bay Mining	11 1/2	-	Hudson Bay Mining	11 1/2	-	
International Nickel	8 1/2	-	International Nickel	8 1/2	-	
Mining Corp. of Canada	29 1/2	-	Mining Corp. of Canada	29 1/2	-	
Noranda	29 1/2	-	Noranda	29 1/2	-	
Quebecmont	28 1/2	-	Quebecmont	28 1/2	-	
COAL			COAL			
Anglo-Iranian	5 1/2	-	Anglo-Iranian	5 1/2	-	
Apex	46/3	-	Apex	46/3	-	
Attok	21 1/2	-	Attok	21 1/2	-	
Burmah	58/6	-	Burmah	58/6	-	
Canadian Eagle Bearer	32/-	-	Canadian Eagle Bearer	32/-	-	
Malayan Eagle	25 1/2	-	Malayan Eagle	25 1/2	-	
Shell	4	-	Shell	4	-	
Trinidad Leasehold	29/9	-	Trinidad Leasehold	29/9	-	
T.P.D.	31/3	-	T.P.D.	31/3	-	
Ultramar	29/-	-	Ultramar	29/-	-	

Company News & Views

Rand Dividend Season Opens

The December Rand dividend season opened this week with the half-yearly declarations from the operating companies in the Consolidated Gold Fields and Anglo-Transvaal group of mining companies.

Generally speaking, payments were better than some quarters had expected, although the reduction in the distributions of Venterspost and Luipaards Vlei disappointed. In the case of Venterspost, it is thought that increased capital expenditure was responsible for the lower payment, while the cut back in Luipaards Vlei's payment was foreshadowed in the chairman's statement that capital expenditure during the current year would be of the order of £260,000.

What reductions have already been made and presumably will be announced subsequently are due to the steady increases in the company's costs which are not being offset by additional revenue received from premium gold sales.

The Consolidated Goldfields group of dividend payments for the past four half-years are contrasted in the table below:

Company	June 1950 s. d.	Dec. 1950 s. d.	June 1951 s. d.	Dec. 1951 s. d.
Libanon			3*	3
Luipaards Vlei	1 0	1 0	1 0	1 0
Rietfontein Cons.	1 7½	1 7½	1 6	1 6
Robinson Deep	1 6	1 0	1 0	1 0
Simmer & Jack	4	4	4	4
Sub Nigel	6 0	5 9	5 3	4 9
Venterspost	1 4	1 1	1 0	8
Vlakfontein	1 0	1 0	10	10
Vogels	10½	1 0	1 0	1 0

*Maiden dividend.

The Anglo Transvaal Group of companies' payments were also up to market expectations—particularly the distribution of 480 per cent equivalent to 24s. per 5s. per share of Consolidated Murchison making 800 per cent for the year.

Name of Company	Dividend No.	Rate %	Rate per share s. d.	Remarks
Cons. Murchison	15	480	24 0	Final making 800% for 1951
Rand Leases (Vogels)...	31	17½	1 9	Interim
Associated Manganese	27	70	3 6	Final making 145% for 1951
Village Main Reef Gold	23	12	1 8	Interim

S.W. Africa's Profit Expansion

The directors' report and accounts for the South West Africa Co. for the year to June 30 is, it is to be hoped, in the nature of a preliminary statement, for while the receipts from ore sales substantiate the directors' statement that "the production and sale of substantial quantities of zinc ore and concentrates has been and is being carried on," no production figures are given in the report to provide a basis for comparison with last year's operations. This same stricture also applies to the statement that "certain quantities of tin and wolfram concentrates are also being produced and sold."

Year to Ore June 30 Sales	Mining and Prospecting Expenses	Tax	Net Profit	Divi- dend %	To Reserve Fwd.	Carry Fwd.
1950 567,208	361,536	77,386	81,658	26½	30,000	45,220
1951 832,672	428,731	213,601	151,618	52½	50,000	46,618

*The issued capital consists of 531,807 shares of 13s. 4d. each.

In any event the proceeds from ore sales was the major item in making up the company's gross revenue for the year which improved from £581,894 to £878,708. As can

be seen from the above table, mining and prospecting expenses were heavier, as was the taxation burden, but the much larger profits available for distribution enabled the company to double its dividend, increase its allocation to general reserve, which now stands at £300,000, and to raise its forward balance slightly.

During the year the wholly owned subsidiary, Kaokoveld Exploration Co. was liquidated without loss and that company's prospecting and mineral rights transferred to the South West Africa Co. The company's rights over the 3,000 square miles within the Grootfontein concession in the Damaraland area has been renewed until January, 1957 and the Tsumeb Corporation through a subsidiary company, Tsumeb Exploration Co., is prospecting and developing this area. South West Africa Co. has a 25 per cent interest in Tsumeb Exploration Co. and the right to all discoveries of vanadates which may be made.

Klerksdorp Consolidated Postpones Scheme

The world situation in general and the conditions ruling in the gold mining industry in particular during the year to June 30 last were two of the three chief factors preventing Klerksdorp Consolidated Goldfields from putting into effect the capital reorganization scheme outlined in the chairman's statement accompanying the 1949/50 report and accounts. This scheme involved the formation of a South African subsidiary to take over the company's freehold properties, mining leases, etc., with a view to raising fresh capital outside this country for the development of these properties. The third factor, and perhaps the most important one militating against putting this scheme into effect was that operations at Dominion Reefs (Klerksdorp) in which the company holds 692,333 ordinary shares, or nearly 27 per cent of its issued capital, during the year, resulted in a small loss. Meanwhile the net financial result of Klerksdorp Consolidated's operations for the year was that £6,929 was added to development expenses, bringing the debit balance on development account to a total of £318,451.

Dominion Reef's Important Discovery

Dominion Reef's (Klerksdorp) during the year to June 30 experienced a substantial reduction in the gross profit on mining operations due to a decline in the grade of ore treated. In fact, it was only the receipt of the sum of £13,277 from premium sales that prevented its production costs exceeding total revenue from gold by £5,617. However, the additional revenue from gold sales was not quite enough to wholly offset this cost, the administration expenses and depreciation with the result that a loss for the year of £843 was incurred. This meant that for the second year in succession shareholders received no dividend.

Ore reserves at the fiscal year end totalled 390,478 tons compared with 594,925 tons a year earlier. This decline was due partly to rising costs which necessitated raising the pay limit to 3.01 dwt. against 2.75 dwt., and partly due to the lack of development tonnage to replace the tonnage crushed. Although working costs including development charges were held down to roughly 19s. 6d. per ton, a rise of approximately 4d. per ton, it is unlikely that this satisfactory result will be maintained in the current year because of the larger development programme and the fact that the full impact of the price increases have not yet been fully felt. This should not give any cause for alarm as the company's net current assets amount to £91,204 which puts it in a good position to absorb these costs and finance its development programme.

Development in the Mackenzie section, states the chairman, Mr. W. M. Kirkpatrick, is the "first major discovery of economic importance which has been made on the mine

for a number of years." Drives advanced so far have yielded good values and of a total of 1,260 ft. of development on reef in this area sampled, 55 per cent averaged 6.99 dwt. Some time, of course, must elapse before ore from this section can be sent to the mill. Meanwhile, in the first quarter of the current financial year the company showed a working loss, before charging London expenses of over £7,000.

The chairman of both companies is Mr. W. M. Kirkpatrick. The annual meeting of Klerksdorp Consolidated will be held in London on December 20, and that of Dominion Reefs in London on December 18.

Jantar Strengthens Its Reserves

Jantar Nigeria, the Nigerian tin and columbite producer, forged ahead rapidly during the year to September 30 last and production of both tin and columbite improved over the previous year enabling the company to take advantage of the high metal prices then prevailing.

Year to Sept. 30	Production Tin tons	Columbite tons	Metal Sales £	Net Profit £	Divi- dend s/d	To Reserve £
1950	217	226	173,430	31,687	20	10,000
1951	266	232	311,544	72,357	35	45,000

It was important for the company to enjoy a good year and to accumulate some capital in view of the probability of the yield from its tin area being lower in the future and capital expenditure fairly heavy until an economic method of mining the tin from under the Basalt Lead is found. Currently, drilling is continuing on the Basalt Lead and indications are that a deposit in excess of 2,500 tons of tin exists in the area. Unfortunately, the problem of winning the tin is not a straightforward one. Conditions are unique and no precedent exists as to what are the right mining methods to be employed. Accordingly, the directors make it clear that the way in which they intend to tackle the problem must be considered as experimental. However, there is general agreement that underground mining will be necessary to win the tin which means higher operational costs than opencast methods. The necessary equipment has been ordered for the initial stage of operations.

The foregoing explains why as much as £45,000 has been placed to general reserve which account now stands at £55,000. Even so the siphoning off from available profits of this amount did not prevent shareholders from participating in the better results nor the company from increasing the amount to be carried forward from £4,951 to £7,602.

The ore reserve position is good for both metals—albeit lower than in the previous year. At the fiscal year-end reserves of tin were 785 tons against 908 tons while reserves of columbite stood at 1,841 tons compared with 1,983 tons.

The annual meeting will be held in London on December 20. Mr. C. A. P. Tarbutt is chairman.

Kamra Tin Has Difficult Year

Kamra Tin Dredging, the Siamese tin producer, had a disappointing year. Output dropped and although the gross dredge working profit was satisfactory enough, no less than £39,000 was absorbed for dredge maintenance. Furthermore, the settlement of the company's war damage claim fell short by £9,000 of the amount actually spent on rehabilitation. Small compensation for this shortfall was the favourable exchange rate allowed which brought about a credit of £7,602. This was written back into the profit and loss account only to be swallowed by the tax man who seemed to take an exorbitant amount of the profits, leaving the company with a meagre £225 to be carried forward.

While the immediate outlook for Kamra appears brighter as during the first six months of the current financial year the dredge operated without mishap, output has been "fair" and prices received have been "good," the longer term prospects are uncertain. Dredgeable land available at Kamra is running out and the question to be settled is whether or not the board will decide to develop its concession in the island of Koh-Ko-Kow about 75 miles up the coast from the present property. The difficulties involved in such a move are not only concerned with the Siamese political situation, tax and labour problems but also with the costs of equipment, building and the other countless items which go to make up such a move.

Year to Mar. 31	Output tons	Dredge Profit £	Working Profit £	Sundry Adjustments £	Tax £	Carry Fwd. £
1950	271	4,748	16	Cr. 4,862	538	1,262
1951	234	9,493†	4,130	Cr. 7,602†	12,770	225

*After charging £39,000 for major dredge replacements and repairs.

† Adjustment of Siamese Government claim.

The chairman, Mr. P. J. Burgess, in his statement puts the problem to shareholders in a succinct and clear manner but comes to no decision. Action on this point cannot be postponed indefinitely and it may be that he will give a clue as to future intentions at the annual meeting to be held on December 18.

Company Shorts

Southern Kinta's No. 1 Dredge in Production.—Southern Kinta Consolidated has authorized Anglo Oriental (Malaya) to announce that its No. 1 Dredge (9 cu. ft. buckets, category "B") completed trials and commenced production on Nov. 1 last.

Malaysiam Tin's First Distribution Since 1947.—Malaysiam Tin will pay five per cent for the year to March 31, 1951, states a preliminary announcement. Net profit for the year, after providing £11,856 (£5,179) for taxation, was £6,836 against £4,240. General reserve received £5,000 against £3,000. The dividend required £3,908 and the carry forward was £5,253 compared with £7,325 previously.

Wit. Deep Reduces Debit Balance.—Witwatersrand Deep, which now owns options and mineral rights in the Potchefstroom District earned a net profit of £1,681 (£1,314) during the year to June 30 last. Taxation charges and expenses incurred in connection with extending the period of the options, required £141. The debit on profit and loss account was therefore reduced from £21,965 to £20,426.

The annual meeting will be held in Johannesburg on December 31. Mr. I. Shaffer is chairman.

Tindals Gold Mines.—The net loss of Tindals Gold Mines, which owns the whole of the capital of Consolidated Gold Mines of Coolgardie, during the calendar year 1950 was £2,479. This included the payment of £2,500 for note interest. Total debit balance on profit and loss account at the fiscal year-end amounted to £10,520. The directors' report states that Mr. H. Mandelstan, one of the directors, failed to find fresh capital in Australia. The annual meeting will be held in London on December 21. Mr. A. H. Williams is chairman.

Lydenburg Estates Share Dealings.—The profit and loss account of Lydenburg Estates for the year ended June 30 showed a loss of £1,950 compared with a profit of £214 for the previous year. During the year the company sold its holding of 45,833 shares at 5s. in Virginia Orange Free State and took up 57,668 shares in Merriespruit, bringing its total holding to 78,811 shares. Of this holding, 53,811 shares have since been realized.

The annual meeting will be held in London on December 18. Mr. A. Comar Wilson is chairman.

Fresnillo Raises Dividend.—The consolidated profit and loss account of the Fresnillo Company, which is incorporated in New York and controls mining properties at Fresnillo, Mexico, for the year ended June 30 was \$2,575,413, which figure was arrived at after meeting all expenses and providing \$2,489,164 for Mexican taxation. Dividend payments on the \$1 shares was \$1.19c. per share (98c. per share) which absorbed a net amount of \$1,156,736. The sum of \$1,000,000 was set aside to cushion the shock of any future inventory price

decline and the carry forward at the fiscal year end was \$4,520,861.

The annual meeting was held in New York on November 27. Mr. D. C. Brown is president.

Tongkah Harbour Tin's Results.—The net profit of Tongkah Harbour Tin Dredging for the year ended June 30, after providing for all expenses, including government export duty of £109,580 (£42,136) Malayan taxation of £105,553 (£29,900) and Thailand taxation of £25,708 was £249,218 compared with the previous year's earnings of £72,742. The benefits of the larger profits were passed to shareholders who received 50 per cent against only 15 per cent in the previous year. The carry forward at the fiscal year end was £274,714 compared with £73,108 in the preceding year.

The annual meeting will be held in Kuala Lumpur, Malaya, on December 20. Mr. W. M. Warren is chairman.

London Australian and General's Higher Trading Loss.—During the year to July 31 the London, Australian and General Exploration Co. incurred a trading loss of £15,961 against £7,122 previously. This result was largely due to the loss on sale of investments amounting to £5,863 which referred to the sale of its shares in Alpine (Barbenton) and also to the trading loss on its Ringslade property of £6,515.

The company has an interest in Central European Mines, Ltd., which owned a lead mine in Yugoslavia, now nationalised. In this connection it is hoped that the commission set up to deal with claims on Yugoslavia will award Central European Mines compensation which in turn would benefit the company. The annual meeting will be held in London on December 28. Mr. W. M. Kirkpatrick is chairman.

Sherwood Starr Pays Five Per Cent.—Net profit of the Sherwood Starr Gold Mining Company for the year to June 30 was £9,771 against £16,869 in the preceding year. However, the net profit for the year under review was struck after meeting taxation liabilities of £3,003 against nil.

From the £13,007 (£17,800) available, £1,297 was allocated for depreciation, £2,091 (£4,907) was appropriated for expenditure on realization and maintenance of assets, dividend payments aggregating five per cent (10 per cent) absorbed £6,250 leaving the carry forward at £366 against £233 previously.

Development result on Level 4 of the Pickstone Mine, in which the company owns a 25 per cent interest was, according to the consultant engineers, "disappointing." This term was used in a relative sense as, out of 1,420 ft. driven, 980 ft. proved payable averaging 6.5 dwt. over 43 in., equivalent to a percentage payability of 69 per cent which can hardly be called disappointing. The meaning becomes clearer when it is understood that in the preceding year percentage payability was 85 per cent.

The annual meeting will be held in Salisbury, Southern Rhodesia on December 31. Mr. Bailey Southwell is chairman.

New Union's Impressive Portfolio.—The report and accounts of New Union Goldfields covering the period July 1, 1950, to June 7, 1951, shows that gross revenue fell steeply from £390,188 to £88,253. After meeting all expenses, including £10,066 (£40,836) for taxation, net profit was £33,912 against £194,986. This figure was swollen by the addition of £413,255 brought in, £14,006 received in respect of taxation refund and £147,706 being the total amount transferred from reserve account making £618,945 (£399,884) available. Contingencies reserve received £250,000 against £50,000 and the balance taking into the account the £10,000 appropriated to meet tax liabilities, was £358,879 (£413,255) which was carried forward.

New Union's substantial shareholdings are shown in the latest balance sheet as under those officially quoted on the Johannesburg and London Stock Exchanges at cost amounting to £1,807,268, their market value on June 7 last being £2,310,326. Shareholdings quoted on the Union Stock Exchange at cost were reported as £165,573, their market value at June 7 being £122,500, although at the end of that month their market value had fallen to £75,000.

The full range of the Company's shareholding, given in the report of the judicial managers accompanying the report and accounts, is impressive, to say the least, and give good grounds for believing that those whose purses are long will be amply rewarded for any investment which might now be made in this company. The 5s. shares are currently quoted around 4s. 9d.

The annual meeting will be held in Johannesburg on December 21. Mr. I. Shaffer is chairman.

Outlook for Perak River Hydro-Electric.—At the annual meeting of Perak River Hydro-Electric Power held on November 30, the chairman, Mr. William Shearer, gave some interesting facts about progress made during the year to

July 31 which explains the improvement in the company's financial results. These results were published in our issue of November 16 and showed that revenue for the year went ahead to £675,154 compared with £591,371 in the preceding year. Behind this improvement was the fact that the total number of units generated amounted to 353,000,000, a 10 per cent increase over the figure for the previous year. Additionally, power sales showed a 17 per cent expansion realizing a gross revenue of £1,138,781 (£971,338), due in part to the greater output, but also to the increased price per unit which became effective on April 1. Thus, the full impact of this increase will not be reflected until the current year's report and accounts are published. In this connection the chairman, in his recent annual statement said that the returns received since the end of the last financial year (July 31, 1951) showed an improvement over last year's figures.

All this is very satisfactory to the management and shareholders alike. Indeed, since the company is, for the first time in its history, free of any charge on its assets, having now extinguished its guaranteed debenture stock, shareholders may look forward to further payments on the arrears of preference stock and perhaps in the not too distant future to payments being made on the ordinary shares.

Western Holdings to Raise £4,000,000.—Fresh capital totalling £4,000,000 is to be raised by Western Holdings to bring the mine to the production stage on the basis of 75,000 tons per month. The method of raising the new funds is to be by a simultaneous share and rate issue.

In a circular issued to shareholders at the end of last week Western Holdings announced that it was proposing to offer 600,000 new 5s. shares at 50s. per share to shareholders in the ratio of one-for-ten and at the same time to offer £2,500,000 5 per cent Registered Unsecured Convertible Notes, of which 2,400,000 will be offered to shareholders in the proportion of £10 of notes for every 25 shares held. The remaining 100,000 of notes being subscribed by Anglo American Corporation of South Africa which will underwrite both issues for a cash commission of 2½ per cent on the £4,000,000 raised.

Holders of notes will be entitled to convert into ordinary 5s. shares at 66s. 8d. per share at any time up to January 31, 1954, and all unconverted notes will be repaid on Dec. 31, 1958, at par. In connection with these proposals an extraordinary general meeting has been called for January 2, in Johannesburg, to consider proposals for an increase in the company's capital from £1,500,000 to £1,875,000, by the creation of 1,500,000 new 5s. shares.

It is stated that development on reef will begin early in 1952 and that production on a small scale with development rock will start about the middle of next year. Ore from stoping will not be available until the drive to connect the two shafts is completed, when it will be possible gradually to increase the tonnage milled to 75,000 per month, which is the capacity of the reduction plant at present being erected. In order to establish ore reserves, it will be necessary for some years to maintain a rate of development considerably in excess of that required to supply the tonnage milled.

Cam & Motor Makes Good Progress.—The higher grade of ore milled by the Cam & Motor Gold Mining Company (1919) during the year to June 30 enabled it to offset the disadvantages of crushing 2,000 tons less than in the previous year.

Year to Milled June 30	Yield (tons)	Grade (oz.)	Profit (dwt.)	Profit per ton s. d.	Ore Reserves tons	Ore Reserves dwt.
1950	246,500	52,515	4.2	22 3	1,555,800	6.9
1951	244,500	55,136	4.5	23 2	1,529,700	6.9

Working profit per ton was practically the same as for the preceding year but working costs, due to an all round increase in wages and the cost of stores rose by 3s. 9d. to 30s. 7d. per ton. The ore reserves position remains sound, a highly satisfactory position, considering the acute shortage of underground native labour and power restrictions experienced in the summer months. This was made possible by the further mechanization of the mine involving additional locomotives, the use of scrapers to handle ore, and mechanical loaders in development ends.

The profit and loss account showed that after meeting all expenses, including provisions for taxation of £102,000 (£95,500), amounted to £149,914, or slightly better than the previous year's earnings of £148,988. Shareholders received 4s. 6d. per cent against 30 per cent paid last year, absorbing £168,750. Nil. against £20,000 was transferred to reserves, leaving the carry forward lower at £47,455 against £66,291.

The annual meeting will be held in Salisbury, Southern Rhodesia, on December 31. Mr. Bailey Southwell is chairman.

CONSOLIDATED GOLD FIELDS OF SOUTH AFRICA

The annual general meeting of The Consolidated Gold Fields of South Africa, Ltd., was held on December 13, in London.

Mr. Robert Annan, the chairman, in the course of his speech, said: The principal feature of the working profit of £1,347,000 of the operating company, New Consolidated Gold Fields, Ltd., is the continued increase in dividends on investments, which at £1,146,000 are the highest in the history of the company. While our American subsidiary and other sources outside South Africa have this year been substantial contributors, we are beginning to reap the benefit of developments on the Far West Rand and in the production of platinum, which were initiated twenty years or more ago.

After providing £740,000 for overseas and United Kingdom taxation, £100,000 for Depreciation Reserve, £80,000 for staff pensions and for the Preference dividends, the balance available out of the year's profit is £330,500 and a dividend of 3s. per Ordinary share has been declared, absorbing £330,750.

As the operating company has declared a dividend of 3s. per share on its Ordinary shares your directors recommend the payment of a like dividend on the Ordinary shares of The Consolidated Gold Fields of South Africa, Ltd. This compares with the dividend of 2s. 6d. per share paid for the last eight years and represents little more than six per cent on the capital employed in the business.

The new mines now being developed on the western extensions of the Rand and in the Orange Free State promise to be of considerably higher grade and will benefit by modern lay-out and equipment. As a finance company we are able to follow these developments in our investment policy. At the present time the average value of developed ore-reserves in the producing mines of the Rand is 4.8 dwt. per ton. Our investment in this field and in the Orange Free State may be analysed according to the grade of ore developed or indicated by drilling as follows: 21.4 per cent in mines, under 5 dwt.; 14.0 per cent in mines from 5 to 8 dwt.; 64.6 per cent in mines over 8 dwt.

Our dividend income has been increasing steadily for the past six years and provided there is no serious deterioration in working conditions it should continue to increase for several years to come as the new high-grade mines come into production.

At the West Driefontein Mine good progress is being made. Development results to date have been most encouraging. The high values and percentage of payability distributed over a strike length of about 7,400 ft. hold out the prospect that this property will become one of the leading high-grade gold producers. At Doornfontein the Annan Shaft intersected the carbon leader in November, 1950, and the decision has been taken to proceed to production at the earliest date. Erection of the reduction plant with a nominal capacity of 48,000 tons per month has been started and the first unit with a capacity of 15,000 tons per month should be ready early in 1953. The dividend income of West Witwatersrand Areas continued to rise this year as a result of an increased dividend by Blyvooruitzicht and a maiden dividend from Libanon. These mines have not yet reached their full planned production and with West Driefontein and Doornfontein now approaching production the prospects for the future are bright.

West Witwatersrand Areas Limited is now in the twentieth year of its development. Up to now the gross amount of capital raised for it and for the five mining companies it has formed is £42,405,462 and the output of gold from the three companies which have reached production has already exceeded £70,000,000 in value. During the past year New Consolidated, Free State, Exploration Co., Ltd., ceded its mineral rights over a part of the farm La Riviera for incorporation in the Harmony Gold mine, acquiring by purchase consideration and subscription rights an interest of approximately twenty per cent in the company, and entitling it to participate in finding the further capital which is to be raised next year. Important developments have also been taking place in the production of platinum and Rustenburg Platinum Mines, Ltd., is again increasing its capacity. Our holding in this industry has now become an asset of very considerable value.

Other interests call for very little comment at this time. In Australia, Lake View and Star and Lake George Mines continue to do well and to earn good profits. The various gold dredging companies in which we are interested have shown some improvement in results in the past year. The oil companies have also done very well under existing conditions. On the technical side, generally, the prospects of our company are most promising. Of other conditions it is not possible to speak with the same degree of confidence. The persistent progress of inflation continues to eat into the profits of the gold mining industry which would have suffered more severely but for the sales of gold made in the so-called "free" market.

The report was adopted.

NORTH KALGURLI (1912) LTD.

The Annual General Meeting of North Kalgurli (1912), Ltd., was held at Winchester House, E.C.2, on Wednesday last.

Mr. C. T. Ley (Chairman) who presided, in the course of his speech said:

Since our last meeting, Mr. F. G. Wright has been appointed a Director to take the place left vacant by the death of Mr. P. E. Marmion. We welcome Mr. Wright on the Board and have every confidence that his advice and experience will be of the greatest value to the Company.

The gross profit for the year was £202,281, which is within a few pounds the same as last year. Provision for taxes was £113,200 against £112,050. After placing £25,000 to a Contingencies Account, and deducting the Interim dividend paid in March of 1s. per share less tax, there remains a sum of £71,278, out of which we recommend the payment of a Final Dividend of 1s. per share less tax, leaving the carry forward slightly higher at £42,403 against £38,523.

You will notice that on the whole the figures appear to be very similar to those of the previous year. But there is this difference which does not show here: during the year under review we benefited by the increased price of gold throughout the full twelve months, as compared with three months only during 1949.

Operating costs have risen steeply and most of the advantage of a higher gold price has in consequence disappeared. Unfortunately this trend still continues without any compensating rise in the gold price.

The final results of the current year have still to reach us but the Board decided that while recommending the final dividend of 1s. per share less tax it would be prudent not to continue paying any bonus this year.

THE MINE

The price for gold has remained constant at £15 9s. 10d. per oz., but the operating costs have risen by 5s. 6d. per ton.

Ore treated shows an increase of 11,673 tons, an average of 12,307 tons per period at the Kalgurli Ore Treatment Co., Ltd., Mill, and an average of 6,467 tons per period at the Croesus Proprietary Co., Ltd., Mill.

Practically all sections were affected by rising costs, and, unfortunately, so it must remain until such time as we are able to meet these additional working costs by a rise in the price of gold, as there now remain few places where further economies can be attempted.

Details of the operations are fully set out in our General Manager's Report for the year.

In spite of the extra work entailed by the new shaft, developments have been well maintained. The small reduction in ore reserves from 2,359,498 tons of 5.62 dwt., to 2,314,941 tons of 5.53 dwt., is accounted for by all available men having been transferred to work in connection with the new shaft. In consequence the ore drawn during the industrial dispute which lasted 3½ months, was never fully replaced.

From the North Kalgurli Shaft the East Lode on the No. 8 Level is now developed over a continuous length of 139 ft. with an average width of 10 ft. Two winzes sunk below the level—one at 854 ft. North and one at 1,024 ft. North—provide the deepest depth of the East Lode system. The first winze at 854 ft. North continued to 68 ft. in ore assaying 27.2 dwt.

The second winze at 1,024 ft. North reached 76 ft. on the west dipping strike fault, without locating the downward continuation of the ore on the west side of the fault as was anticipated. Diamond drilling also found no ore to the West but on the East side a bore intersected 10 ft. of ore averaging 14.5 dwt., and a further 14 ft. of 1.5 dwt. This was quite contrary to expectation, but the explanation must await the opening up of the No. 9 Level, which cannot be accomplished until after the completion of the new shaft.

From the Kalgurli Shaft the most noteworthy development was the downward continuation of the N.E.D. Lode on No. 16 Level where 87 ft. of driving averaged 53 dwt. per ton.

The downward continuation of this lode on the No. 17 Level has so far proved rather disappointing.

A point worth noting is that the whole of our stopping activities are now carried out with tungsten carbide tipped steel and light air-leg equipment, giving greater flexibility and increased output per man shift.

The principal work during the year under review has been in connection with the new shaft. This entailed work far in excess of what is visible on the surface, and called for engineering skill of the highest order. Drives, haulage ways, conveyor belts, etc., all have to be made to synchronise with the new shaft. Shaft sinking, pilot winzing and timbering, all have to be carried on while the ordinary work of the mine is proceeding.

The report and accounts were adopted.

LAKE VIEW AND STAR

The Forty-First Annual General Meeting of Lake View and Star Ltd., was held on December 12 in London.

Sir Joseph Ball, K.B.E., the chairman, in the course of his speech, said:—

The result of the year's operations was a mining profit of £563,789, which compares with £567,120 earned during the previous year. From this the sum of £340,000 has been appropriated for U.K. taxation, as against £321,500 last year, the increase being due to the increases in the rates for income tax and profits tax.

Two interim dividends, each of 6d. per share, less tax, were declared during the year, absorbing a net amount of £73,500. After providing £26,990 for depreciation of plant and machinery, there remains, with the balance of £36,379 brought forward from last year, the sum of £159,678, out of which your directors recommend the payment of a final dividend of 1s. 6d. per share, less tax, thus maintaining the total dividend at last year's rate—namely 2s. 6d. per share. On this basis, the carry forward will be increased by £13,049 to £49,428.

Current assets exceed current liabilities by £441,666. During the year, a one-third interest in the Porphyry Gold Mine was acquired from the Wiluna Gold Mines Ltd. Our share interest in this undertaking is now 13,333 shares out of an issued capital of 20,000 shares, and we have accordingly assumed the administration of the Porphyry Company, which, pending a substantial improvement in the labour situation, has been placed on a care and maintenance basis.

Development footage during the year was increased by 4,367 to 21,867 ft., driving totalling 13,295 ft. Of this, 12,586 ft. was advanced on lodes—8,194 ft., or 65 per cent., being in ore averaging 5.3 dwt. per ton over a width of 55 in., an increase on last year of 1,993 ft., but at a slightly reduced width and grade.

By far the greatest footage in drives was again in the Western group of mines, where out of 8,638 ft. driven on the various lodes 5,173 ft., or 60 per cent., averaged 5.1 dwt. per ton over a width of 54 in. Here 4,724 ft., representing 91 per cent of the payable footage, was on the "minor lodes," which averaged 5.2 dwt. per ton over 54 in.

Last year I referred to the enormous increase in tonnage from these lodes since 1932, when the total ore reserve was only 186,000 tons. This reserve over the years has thus had 1,307,700 tons added, which, with the ore milled, makes a total increase of over 4,000,000 tons.

In the Lake View and associated mines, or Eastern group, the payable footage increased by 1,802 to 3,021 ft., averaging 5.6 dwt. per ton over 56 in., the percentage of payability having also increased from 60 to 76.5 per cent.

ORE RESERVES

The total ore reserves at July 1, 1951, are estimated at 4,100,400 tons, averaging 4.72 dwt. per ton, a decrease of 192,000 tons on the previous year. This decrease is, however, largely due to the elimination of 112,000 tons of marginal ore from last year's estimate, as owing to the higher working costs these are no longer payable. Positive and broken ore available for mining amounts of 3,779,500 tons, or 92 per cent of the total ore reserve; of the total 78.4 per cent is in the Western Group, and 21.6 per cent in the Eastern Group which is approximately the same as last year.

Ore milled during the year increased by 41,954 to 625,900 tons, averaging 4.4 dwt. per ton, a decrease of 0.36 dwt. per ton on the previous year. Recovery of gold was also slightly reduced at 92.45 per cent, this being due to the lower grade of ore treated. The Lodge-Cottrell Precipitator was completed and has been in operation since the end of December, and results so far point to a saving of over £7,000 a year; an extremely satisfactory state of affairs.

Although a greater tonnage of ore was milled, the average working cost, excluding retreatment of old residues, increased by 4s. 5d. to 35s. 2d. per ton. Of this increase, 3s. 8d. was in mining, and was due mainly to higher rates paid to contractors underground. Costs of stores, equipment and transport continued to rise.

At the Chaffers retreatment plant 469,377 tons of old residues were treated for a profit of £47,388. This increase of £34,050 over last year was due to the increase in tonnage and grade treated.

The Ivanhoe dumps are now the main source of supply, and being of lower grade will yield a smaller margin of profit on retreatment.

While the shortage of skilled miners continues, the average number of men employed underground during the year increased by 42 to 453, and the total average of all employees by 63 to 987. These increases were mainly due to the closing down of the Paranga mine, but while the figures represent some improvement on those for the preceding year, Lake View and Star is still working considerably below its full complement of skilled employees. In addition, I regret to say that absenteeism has increased and is a disorganising factor, particularly as regards underground operations.

The major factor affecting the whole of the company's operations was the constant rise in working costs. The basic wage was increased for all industries, including gold mining, during the year by £A.2 1s. 2d. per week. Since the end of the year under review, there have been still further increases in the basic wage, with the result that costs per ton amounted during the four-week period ended November 6, 1951, to no less than 39s. 7d. per ton, and the end of rising costs is not yet in sight.

It is satisfactory to note, however, that development work continues to show very favourable results as will be seen from the following information taken from the General Manager's Development Report covering the period from July 1 to October 9, 1951.

"Development totalled 6,691 ft. of which 4,314 ft. was driven on lodes, 2,898 ft. or 67 per cent being in ore averaging 5.9 dwt. per ton over a width of 53 in. The main points of interest were:—

"In the Lake View and Associated Mines of 1,348 ft. advanced in drives 924 ft. or 68.5 per cent averaged 5.68 dwt. per ton over a width of 53 in.

"In the Western Group of Mines, driving on the 'Minor Lodes' and Nos. 2 and 4 lodes totalled 2,966 ft. of which 1,974 ft. or over 66 per cent averaged 5.9 dwt. per ton over a width of 53 in.

"These results compared with the previous quarter show increases of 1,203 ft. in total development, 1,039 ft. in drives on lodes, 425 ft. and 0.6 dwt. per ton in pay footage the width being the same."

SALES AT A PREMIUM

The abandonment by the I.M.F. authorities of attempts to control the sales of gold at a premium in the free market, was closely followed by an official announcement by the Australian Government that producers of gold in Australia would be allowed to sell 100 per cent of their production at the world free market price. This should apparently result in an increase of profit to Lake View and Star amounting, in a full year on the basis of the 1950-51 production figures, to some £130,000 sterling.

It has, however, been suggested in various quarters that the recent additions to the quantity of gold available for sale in the world free market might well result in some reduction in the premium at present obtainable. It is, however, quite impossible at this stage to forecast the future situation with any degree of accuracy. I would, however, point out that the Union of South Africa, selling 40 per cent only of her production in the free market, will probably sell about 4,800,000 oz. per annum in this way, whereas the total Australian production of gold during the calendar year 1950 did not amount to more than about 850,000 f.o.z.

The report was adopted.

CONSOLIDATED TIN MINES OF BURMA

CONDITIONS IN BURMA

The Twenty-First Annual General Meeting of The Consolidated Tin Mines of Burma, Ltd., was held on December 7 at Alderman's House, Bishopsgate, London, E.C.

Mr. W. J. C. Richards, chairman of the company, who presided, in the course of his speech said: Gentlemen,—Until the balance-sheet values of our fixed assets in Burma can be adjusted to cover damage sustained during enemy invasion and subsequent civil disturbances, our balance-sheet cannot present a realistic statement of the company's affairs. Such an adjustment, desirable as it is, cannot be made while lawlessness is rife, and no useful purpose would be served by attempting a revaluation until it is reasonably certain that further damage will not occur.

Lawlessness continued and became more serious during the period covered by the accounts. Our general manager and other British employees have not been permitted to visit the mines since they were evicted nearly two years ago. Production from the mines was obtained by contractors working with the authority of the company, but a quantity of ore probably larger than that which came into the company's control was illicitly extracted from the company's properties.

It is from purchased ore that most of the profit for the year has been derived. Satisfactory as it may appear to be to have operated profitably under such conditions, it must be recognised that it is at the expense of ore reserves; and we cannot calculate the extent of their diminution.

The profit for the year under review is no guide to future prospects. Most of the ore we sold was bought on a rising market. The price of wolfram to consumers has again been brought under statutory control and trading opportunities are not as favourable as they were.

Your Board's aim since the end of the war has been to husband, and as far as possible, augment liquid resources. Our net current assets at approximately £170,000 are more than last year and justify the Board's present intention to continue recommending dividends to the extent that current profits permit.

The report and accounts were adopted.

LAMPA MINING COMPANY

The Thirty-Fifth Annual General Meeting of the Lampa Mining Company was held on December 6, in Liverpool.

The following is an extract from the Chairman's statement:

The production of Matte during the year has increased from 763 tons in 1949/50 to 1,049 tons in 1950/51, an increase of 286 tons. But the grade of the matte has declined, in copper from 33.7 per cent to 31.3 per cent, and in silver from 304 oz. to 237 oz. per ton. On the balance, however, we have produced more copper and silver than we did last year. The tonnage fed to the smelter has increased slightly and while it showed an improved copper content there was a decline in the silver content. The recovery percentages both show great improvement, that for copper from 67 per cent to 76 per cent, and that for silver from 74 per cent to 85½ per cent. The improvement in the output and particularly in the percentage of recovery reflect great credit on the careful work of our metallurgist, Mr. F. Pollandt.

The main source of our mining output continues to be our Berenguela Mine which as you know is a large medium grade manganese deposit impregnated with copper and silver. To extract the copper and silver we have as yet no alternative but to smelt it, in conjunction with other ores for fluxing purposes. This is a costly method of dealing with the ore, owing to the heavy consumption of petroleum and pyrites. Moreover it limits our operations to selected high grade ores. Our metallurgist, Mr. Pollandt, originally brought to our notice a method of calcination and flotation which he operated with good results in our mine laboratory. This process was investigated by experimental laboratories in the U.S.A. over a considerable period without very satisfactory results. When, however, the experiments were transferred to Messrs. G. T. Holloway & Co., Ltd., metallurgical chemists of Acton, better results were obtained and they fully confirmed Mr. Pollandt's results in their laboratory.

The difficulty since then has been to design a plant which would reproduce on a large scale and under continuous operation the very critical conditions required by the calcination process. The flotation process presents no special difficulty, provided the calcination is satisfactorily accomplished.

Since our meeting last year we have been in touch with Dr. N. V. S. Knibbs, B.Sc., a well-known consulting Chemical Engineer, and a specialist in the design of furnaces. Dr. Knibbs is at present in America and will pay a visit to our mine before returning. He expresses himself as optimistic about solving our calcination problem in a commercially practicable manner, and we hope very shortly that he will design for us a pilot furnace which we can operate at the mine, to obtain data on which to base the design of a large scale commercial plant at a later stage.

Turning to the Accounts themselves there are one or two points which I should like to bring to your notice. The first is taxation. We are glad to say that we have at last agreed with the Inspector of Taxes our total liability on our profits up to 30th June, 1950, and that this embodies an allowance for the depletion of our mines and unilateral relief for double taxation as laid down in the Finance Act, 1948. It is very satisfactory to the Board to have these somewhat complicated matters straightened out, and as you will see from the Accounts it has released the sum of £1,657 which was previously over-provided for British taxation. With regard to Peruvian taxation, although we have reserved each year a sum to cover our estimated liability as assessed by our Peruvian Auditors, Messrs. Price, Waterhouse, Peat & Co., we have not yet had final agreement for the last five years from the Peruvian tax authorities.

Points in the Balance Sheet to which I would draw your attention are, first, that we have now finally extinguished the exchange suspense account, secondly that we have written down the value of our holding in Limbani Syndicate Ltd., to a figure much nearer its true worth, and thirdly that our surplus of current assets over current liabilities continues to improve, and in general our balance sheet reflects a reasonably liquid position.

We have felt it right that the shareholders should share in this satisfactory state of affairs by having their dividend raised to the 10 per cent level, and we feel we can count on your agreement on this point.

I can say very little about the future prospects except to report that up to date production has continued at about the same rate and with no marked change financially either for the better or the worse. At the same time I must warn you that costs continually rise, and we cannot see the end of this tendency. Whether favourable metal prices, exchange rates and so on will continue to counteract the rising costs of production and to afford us favourable financial results, is more than we can foretell.

The report and accounts were adopted.

BERALT TIN & WOLFRAM

MR. F. GATES ON THE WOLFRAM PRICE FLUCTUATIONS

The Twenty-Third Annual General Meeting of Beralat Tin and Wolfram, Ltd., was held on December 11 at Winchester House, Old Broad Street, London, E.C.

Mr. F. Gates, chairman of the company, presided.

The Chairman in the course of his speech said: At our last general meeting, I referred to the sudden sharp fluctuations to which the price of our principal product, wolfram, is subject, with particular reference to a period in the latter half of 1949, when world supply was far in excess of demand and wolfram was almost unsaleable.

The figures now presented to you show the opposite side of the picture and relate to a period during which demand has outstripped supply and the price has had to be raised sufficiently to encourage the working of high-cost deposits throughout the world.

SALES POLICY

In March, 1951, when our output of wolfram had been running steadily for some months at about 160 tons per month, the company was asked by the Portuguese authorities if we could increase the output and enter into a contract with the U.S. Government for a period, thus providing U.S. dollars against which the company would, of course, receive the equivalent in escudos.

We found it possible, in compliance with this request, to increase output to about 200 tons per month and in June last entered into a contract with the U.S. authorities for 1,000 short tons to be delivered at a fixed price over a period of two years. In October we concluded a contract with the Ministry of Materials, also for a period of two years, for 100 tons per month, 50 tons of which were sold at a fixed price and 50 tons at the market price prevailing from time to time. Both these contracts were reported in the Press.

We are thus left with a balance of some 60 tons per month for sale at the Board's discretion and as a margin against eventualities. These arrangements, I consider, place the company in a stronger position than at any previous time in its history.

MINING OUTLOOK

As for the mine itself, you may rest assured that the main section, from which present output is entirely derived, has opened up in depth in a way which fully confirms the optimistic forecasts I have from time to time made to you.

I come now to the wolfram-tin area known as Vale da Ermida which I referred to at our last meeting as being a sector of potential importance.

We have done more work in this area but the veins so far exposed are not comparable in width or mineral content with those in the main mine. On the other hand the veins are so closely adjacent in some parts of the area that two or even three of them might be extracted within our normal stoping width. The area contains a very large tonnage of mineralised ground and we shall continue our study in order to determine at what prices of tin and wolfram it can be worked profitably.

SOCIAL AMENITIES

Over a great many years the company has always done its best to comply strictly with all the laws of Portugal and to do everything possible for the welfare of employees. I am sure the Portuguese authorities recognise this and appreciate the efforts which have established on the barren hills a self-contained township with a fine hospital, churches, cinema, football ground, swimming bath and other recreational facilities.

It was a great pleasure to me to visit the mine in November, 1950, when our general manager, Mr. G. A. Smith, was decorated with the Order of Industrial Merit. On that occasion the Bishop of Guarda referred to the good labour relations at the mine and said that the decoration was a tribute not only to Mr. Smith but also to the company, its chairman and its Board of Directors.

It is now 19 years since Mr. Smith entered the company's service in Portugal and throughout that period he has devoted himself wholeheartedly to the company's interests.

PROSPECTS

Let me now try to sum up the company's present position and prospects. We have a mine producing the highest grade of wolfram which is well known to steel manufacturers throughout the world and we have reserves of ore available for years to come.

The company is bound, as in the past, to have its "ups and downs" owing to the mercurial nature of the wolfram price but is far better equipped than formerly to contend with low price periods and, as I stated earlier, the contracts into which we have entered should, as far as I can see, ensure a reasonable margin of profit for some time to come.

The report and accounts were adopted.

GÉOMINES

The Annual General Meeting of the Compagnie Géologique et Minière des Ingénieurs et Industriels Belges was held in Brussels on Tuesday, December 11. The following is a translation of the text of the directors' report which has been circulated to shareholders with the report and accounts for the year to June 30, 1951:

Production of cassiterite has totalled 3,820 tonnes as against 4,650 tonnes in the preceding period. This reduction in output is due principally to the exceptionally heavy rains which resulted in the flooding of two of our most important alluvial workings, with the consequential loss of nearly two months production and, secondarily, to development work in hard rock which has continued to require the attention of a part of our mining force.

TIN MARKET

As a result of the heavy purchases due to events in Korea, the price of tin, which stood at 120c. per lb. at the beginning of our financial year, advanced rapidly until it reached a maximum of 182c. last March.

However, shortly afterwards a considerable reduction occurred, bringing the price gradually down to 123c. per lb. by the beginning of June as a consequence of action by a U.S. Government agency, which was entrusted with the monopoly of American purchases and sales of tin.

The free market in New York was thus abolished and, as from June 19, the price was fixed at 106c. while the Singapore market quotation was about 114c. per lb. Since the end of our financial year the price has been further reduced by the American authorities to 103c. while it has fluctuated in Singapore between 108 and 120c.

For the period under review, the average price at which our sales have been affected works out at 130c. per lb.

In addition to the tin won from our cassiterite production, we have delivered tantalite, columbite and columbium-tantalum ashes to our American customers.

Our deposits also contain important reserves of spodumene (the ore of lithium), the value of which is the subject of preliminary investigations. For the treatment of this ore it will be necessary for us to have considerable supplies of electric power at our disposal.

NEW WORKINGS

In our last report we announced that mining had commenced in one of the sections of hard rock at Manono. We can now report that as a result of this the cassiterite content of the ore suggested by earlier prospecting has been confirmed.

Our deposits are thus proved to contain very important tin reserves. But its working calls for special techniques and the use of special machinery, the gaining of experience in the use of which needs time.

The additional orders, which it was necessary to place to improve the workings and increase output, have had to conform to the very strict regulations relating to the utilisation of raw materials and to production and export, adopted to aid the economy of countries engaged on rearmament. Moreover, supplies have not been delivered to time. Consequently in respect of orders placed in the United States against the \$1,700,000 credit granted to our company by the Economic Co-operation Administration, more than half the deliveries had yet to be received at the end of our financial year.

By and large we are about a year behind with the execution of the programme set out in our last report.

In the period under review our new investments in fixed assets have amounted to 148,000,000 Congo Francs bringing the total of new investment under this heading since June 30, 1947, to 571,000,000 C.frs. As we have since that date provided 210,000,000 C.frs. for amortisation, it follows that we have invested, partly out of our own resources, 361,000,000 C.frs. in four years.

Furthermore, we shall soon have to face expenses necessitated by the programme of extensions to our existing plant including in particular the enlargement of our central hydro-electric plant at Piana, which is now inadequate to meet our power requirements. It is consequently essential that we should soon increase our capital. We shall shortly call an extraordinary general meeting to pass the necessary resolutions in this connection.

At the request of the Study Group which is evaluating the Lukuga coal basin a few hundred tons of coal from our Greinerville colliery have been sent to Belgium. Experiments are in progress regarding the chemical processing of this coal.

The main hydro-electric plant has produced 52,000,000 KWH during the year. We have treated our own tin ores as well as a substantial part of the production of the Georuanda company.

STAFF

At the end of June, 1951, our staff at Manono totalled 150 Europeans and 6,500 natives engaged in mining and allied operations.

In accordance with our established policy we are striving to raise the living standard of our staff, progressively to increase

their earnings, and to improve their living conditions. In particular, we have been carrying out a new building programme to provide spacious housing both for European and native personnel.

INVESTMENT PORTFOLIO AND SUBSIDIARY INTERESTS

The Georuanda Company has produced 683 tonnes of cassiterite in 1950. It made a profit of 14,959,700 C.frs. against 5,058,954 C.frs. in 1949, making possible the distribution of a dividend of 30 C.frs. net per 500 francs share.

The Société Minière de la Lueta has shown a net profit of 609,174 C.frs. in 1950, permitting the payment of a dividend of 30 C.frs. per 500 franc share.

The Luena Collieries produced 160,200 tonnes of coal in 1950 and made a profit of 5,287,224 C.frs. The 500 franc shares yielded a dividend of 41.50 C.frs. net.

In its second year of operation, the Société Afridex closed its accounts with a surplus of 2,556,810 C.frs., all of which was allocated to amortisation.

In co-operation with Comité Spécial du Katanga, we have acquired an interest of 3,000,000 C.frs. in the Syndicat de la Cellulose, formed with a capital of 8,000,000 C.frs. for the purpose of studying the production of pulp from the papyrus growing in the region of the Kisale Lakes in Katanga.

PROFIT AND LOSS

Our gross profit for the year under review amounts to 178,807,429.86 C.frs. After deducting general expenses, interest payments and amortisation totalling 80,290,682.86 C.frs., there remains a balance for disposal of 98,516,747 C.frs., as against 92,687,060 C.frs. in the preceding year.

After providing for statutory deductions, this balance enables us to distribute, as last year, a dividend of 55 C.frs. net and to carry forward 5,829,687 C.frs. But having regard to our present cash position, we propose that it should be left to your directors to decide the actual date on which the payment of this dividend should be made.

At the date of the Annual General Meeting, Monsieur Albert Dewandre, vice-president, Monsieur Rene-Jules Cornet, director, and Monsieur Emmanuel Greiner, auditor, retire and being eligible, offer themselves for re-election.

PAHANG CONSOLIDATED

The Forty-Fifth Annual General Meeting of the Pahang Consolidated Co., Ltd., was held on December 13 in London, Mr. D. J. Ward, the chairman, presiding.

The following is an extract from his circulated address for the year ended July 31, 1951:

The increase in the company's output from 2,316 tons of black tin last financial year to 2,762 tons this year, and the high price of tin from October, 1950-May, 1951, are responsible for the excellent results. These results could not have been obtained without the very efficient and loyal service of our general manager—Mr. Farmaid—and his staff in the East, who, in an isolated situation, still face emergency dangers as in the past. More bandits are seen in the company's neighbourhood than formerly, due to increased activity against the bandits in other parts of Malaya.

The output has remained at 240 tons of black tin per month since March last. Development has continued patchy and consequently 240 tons per month should be regarded as our maximum output. The 1,200-ft. level is now being opened up and should development there show values equivalent to the 1,100 ft. level, the maintenance and increase of the company's ore reserves will be the first consideration.

The profit on mining for the year amounted to £1,219,450, compared with £456,029 in the previous year. After charging London general expenses and crediting dividends and interest received on investments, there is a balance of £1,237,583, out of which appropriations have been made of £53,287 for depreciation, £667,034 for taxation, £12,094 for the writing down of the company's investment in the Kuala Reman Rubber Estates, Ltd., and the sum of £343,130 to general and development reserve. Shaft sinking expenditure of £17,989 has been charged against this reserve, which now stands at £590,000.

After making the allocations mentioned there remains a balance available for distribution to the stockholders of £162,038. Interim dividends of 3½ per cent on the Preference and 30 per cent on the Ordinary stock have already been paid, and final dividends for the year ended July 31, 1951, of 11½ per cent on the Preference and 45 per cent on the Ordinary stock are recommended.

Despite an increase of 26 per cent in the tonnage crushed our costs have increased this year by 31 per cent., and are still rising.

Malaya is suffering from inflation, as we are in this country, and the initial remedy is the same—curtailment of Government expenditure.

The report was adopted.

Topical News in Brief

U.S. Loan to Chilean Steel Plant.—The U.S. Export-Import Bank has granted the Chilean Development Corporation a \$10,000,000 loan to expand the Huachipato steel plant's installations.

Indonesian Tin For W. Germany.—The West German Government Import Committee has authorized the import of Indonesian industrial goods and raw materials valued at \$3,000,000, including tin to the value of \$1,000,000.

U.S. Participation in Australian Hydro-Electric Scheme.—Australia and the U.S. have recently signed an agreement under which design work for part of the Snowy Mountain hydro-electric scheme will be carried out in the United States. The contract provides for the training of twelve Australian engineers in the U.S. during the next few years.

Iron and Bauxite Mining in Malaya.—Japanese reports say that the Malay Industrial Development Co. (Sangyo Kaihatsu) proposes to resume iron mining in Kelantan and bauxite working in Johore. Japanese operations in these two States were fairly extensive before the war but they appear to have remained idle since.

New South Australian Opencast Coal Deposit.—Thirty million tons of coal, suitable for opencast mining, have been proved near Moorlands, South Australia, according to a report from the South Australian Mines Department. The Electricity Trust of South Australia is investigating the possibility of establishing a power station in the area.

Italian Miners in U.K.—Of 1,320 Italian miners who have, according to the Parliamentary Secretary to the Ministry of Labour, arrived in this country, approximately 450 are now working in the mines and 200 more have completed their course of instruction in English and have gone forward to colliery training centres.

South African Locomotive Order for Germany.—A tender worth £2,375,000 sterling to supply 25 Garratt type locomotives to the South African railways has been accepted in Germany. They cost £95,000 sterling each and must be delivered within 56 weeks. Delivery of the first locomotives is expected early in the second half of next year.

Discussions on South African Uranium Production.—Representatives of the U.S. and the U.K. Governments are discussing with the South African authorities the production of uranium from gold-bearing ores, says a statement by the Department of Mines. These discussions are a continuation of those which took place in the Union previously.

Japanese-Russian Coal Negotiations.—A Japanese firm is reported by Reuter to be negotiating with trade experts from the U.S.S.R. Mission in Tokyo to import 400,000 tons of coal from Russia. The report followed Russian approaches to Japanese politicians and industrialists seeking to open exchanges between Japan and Russia.

German Technicians for Egyptian Iron & Steel Works Project.—The Egyptian Ministry of Public Works has decided to seek the services of German experts for the setting up of the iron and steel works connected with the Aswan Dam hydro-electric power scheme, according to a Reuter report from Cairo. However, it is not yet known when and what steps will be taken to implement this decision.

French Copper Import Regulations.—The French authorities have decided to modify the present custom regulations concerning the import of raw copper. The new regulations provide, firstly, that import declarations will have to mention pure copper content of raw copper and, secondly, purifying will be carried out at the rate of 100 kilos of copper sulphate for 26 kilos of pure copper contained in imported raw copper.

Jordan's Economic Needs and Resources.—A Jordan loan delegation is being sent abroad to secure funds which cannot be raised locally. King Talal of Jordan stated in an address to the National Assembly, covering plans to deal with the country's economic condition. Jordan is described as possessing many minerals, such as high-grade phosphates, bituminous limestone, manganese, copper, gypsum, quartzite, potash barytes, feldspar and kaolin, in commercial quantities.

Mannesmann Group to Set up Steel Works in Brazil?—Two German technicians have visited the Brazilian State of Minas Geraes in connection with the choice of a site for the installation of a steel-works. The technicians were sent by the Mannesmann group, Düsseldorf, who would supply the capital for the project. When completed, the new works' output of steel tubes alone would be 50,000 tons a year, states a Reuter report from Rio de Janeiro.

New Steel Mill for Sao Paulo?—The Governor of the State of Sao Paulo is reported by Reuter to have confirmed rumours that the erection of a steel mill at Piassaguera, near Santos, is under study. The projected production capacity would be equal to that of the Volta Redonda plant, i.e., slightly over 600,000 tons of steel. The initial capital would be in the region of 5,000,000,000 cruzeiros, subscribed in equal parts by the State Government and by private enterprise.

Steel Industry for Pakistan.—Pakistan will spend Rs. 63,500,000 on the development of the steel industry. According to our Indian Correspondent, a scheme has been worked out in the light of the recommendations made by the U.S. Steel Mission, which visited Pakistan in 1950. The plants will be installed by the Government in the immediate future. They include two 50-ton basic hearth furnaces with blooming and billet mills of 60,000-ton capacity. Pakistan's total requirements of steel are estimated at 350,000 tons annually.

First Atomic Heating Plant Installed at Harwell.—Britain now has the first atomic central heating plant in the world. It is at the Ministry of Supply atomic research establishment, Harwell, where a building containing 80 offices is drawing its heat direct from BEPO, the large experimental atom pile. Eventually two, and perhaps three, more buildings will also have "atomic radiators" and the Ministry's coal consumption will be cut by at least a thousand tons a year. After counting all incidental expenses, the saving in cash is estimated at £2,650 a year. Costs of the installation amount to £15,000.

Heavy Industrial Projects in Yugoslavia.—The Sisak iron-works, which is scheduled for completion by the end of next year, will produce 130,000 tons of pig-iron, while two Siemens-Marten furnaces will turn out 90,000 tons of steel. About 10,000,000 dinars have been allocated for the completion of the aluminium electrolytic plant and rolling mill at Sibenik, which will produce annually 14,500 tons of rolled and pressed aluminium products. As regards electric power projects, the hydro-electric power station at Vinodol and the thermal station at Konjina, which will be the two largest sources of electrical energy in Yugoslavia, will produce about 210,000,000 kW annually.

New French North African Iron Ore Project.—French and Canadian companies and an agency of the British Iron and Steel Federation have concluded an agreement in Paris to prospect iron ore deposits in Mauritania. French Africa, states a Reuter report from Paris. French interests would hold the majority of the shares in the new venture. According to initial estimates, output may reach several million tons of high-quality ores. If the results of the surveys are favourable and mines are opened, it will be necessary to build a railway line through Rio-de-Oro, Spanish Africa, to the port of Villa Cisneros.

Shortage of Coal Forces Sweden to Increase Peat Production.—The production of peat will be greatly increased in Sweden, according to a plan just presented by a Government committee of experts. A scheme for the next three years fore-shadows an annual output of 400,000 tons, while intensified research, long-term marketing guarantees and Government loans will stimulate the large-scale rationalization of the industry and the adoption of mechanized mass-production methods. It is estimated that the peak of 4,000,000 tons per annum will not exhaust the resources in the Swedish peat bogs within the next two thousand years.

U.S. Steel Exports to Australia Restricted.—American steel exports to Australia for the first quarter of next year will only be permitted in cases where it is essential to the direct military production of America or a friendly foreign nation or to industries directly supporting defence, according to a special notice to the Australian Government from the American Office of International Trade. The notice said that if guarantees on these points could not be given, no export licences would be approved for the first quarter of next year and these three requirements would be the basis for strict export priorities for an indefinite period. Normal commercial licensing for steel could not be expected for some time.

German-Spanish Technical Agreement.—Three big West German firms have concluded an agreement with a Spanish enterprise, providing for German assistance in Spanish industrialization projects, reports the West German Economic News Agency. V.W.D. The German firms are: Maschinenfabrik Augsburg-Nuernberg A.G., Augsburg, Gutehoffnungshuette A.G., Oberhausen, and the Schloemann firm of Düsseldorf, while the Spanish partner is the Enterprise for the Promotion of Heavy Industries, a subsidiary of I.N.I. (State Institute for Industry). Under the agreement, the German and Spanish firms will construct a number of industrial enterprises, such as power plants, and machine installations, in Spain and in the Spanish colonies. The German firms will also provide technical assistance.

Australian Coal Production.—Production of black coal in Australia in the fiscal year to June, 1951 rose to 16,404,000 tons from 14,912,000 tons during 1949/50, according to the Commonwealth Statistician. The corresponding figure for 1938/39 was 12,608,000 tons. Output in New South Wales in 1950/51 totalled 12,682,000 tons against 11,293,000 tons in 1949/50, and 10,383,000 tons in 1938/39. Total brown coal production fell slightly to 7,282,000 tons from 7,622,000 tons in 1949/50 (3,663,000 tons in 1938/39).

U.S. Coal Ports Jammed.—Reports from the Coal Exporters' Association state that exports of bituminous coal from the U.S. had about reached their ceiling and that loading piers at most eastern and Gulf Coast points were jammed. Most of the piers will not be able to accept any further coal until more vessels are available to take away the present stocks. Some export concerns in New York said that the jammed conditions here prevented them from achieving their goal of delivering 4,000,000 tons to overseas buyers in November. Some coal originally intended for export will have to be sold to domestic buyers because of the lack of ships.

India's Sillimanite Deposits.—Plans are now being made to collect sillimanite which occurs at a number of places in the north-western portion of Nongstoin in the Khasi hills, states a report received from our Indian Correspondent. Investigations have revealed that sillimanite, a mineral used for making refractory bricks and certain type of ceramic wares, is available in 21 localities in the Khasi hills. According to official sources, the majority of deposits contains massive sillimanite with little corundum. The total minimum quantity of sillimanite available is estimated at 251,000 tons. These deposits, it has been explained, are situated in inaccessible areas and the main drawback for their development is the lack of transport.

Snowy Mountains Development Scheme.—The Snowy Mountains Hydro-Electric Authority intends to move the site of the proposed Adamaby Dam on the Eucumbene River five miles further downstream. This will treble the water storage potential and make possible a gain in generating capacity of 330,000 kW—bringing the total for the complete Snowy scheme to around 3,000,000 kW. Adamaby Dam will be the main storage for the Snowy-Tumut diversion and, under the revised arrangement, will have total storage of about 3,000,000 acre feet. The water will pass through seven power stations before reaching Blowering Dam and the junction of the Tumut and Murrumbidgee Rivers. This dam will regulate the flow for irrigation.

Ship Channel for Venezuelan Iron Ore Shipments.—The Orinoco Mining Company has awarded contracts to two companies for the dredging and maintenance of a ship channel in Venezuela. It will run from the Gulf of Paria to Puerto Ordaz. According to the president of the Orinoco Mining Company, the Macareo and Orinoco rivers in Venezuela would be dredged wherever necessary to provide a ship channel for 170 miles from the Gulf to the Company's ore docks at Puerto Ordaz. This channel would permit ocean-going ore carriers of drafts up to 24 ft. to travel up the river to Puerto Ordaz and load iron ore from the company's Cerro Bolivar ore deposits for transport to the United States. Work would begin within 90 days, and the channel was expected to be completed within two years.

New Czechoslovak Steel Plants.—Three large steel combines are at present under construction in Czechoslovakia, according to a Reuter report from Vienna. The new installations have been planned by Russian and Czechoslovak engineers and form part of the industrialization plan for Eastern Europe. Two of the plants are located in Slovakia. One of these, in the vicinity of Banská-Bistrica and Altscholl, will produce both crude and special steels and will take over production from the existing plants at Povazská-Bistrica and Dubnec. The second Slovakian steel combine is situated in Kaschau; it is expected to be finished by the autumn of 1952 and to go into production around the middle of 1953. Builders are working round the clock at a third plant at Künschitz, Moravia, stated to be the largest of all current Czechoslovak steel projects. It is to have a large rolling mill section and a special sheet mill.

Austrian Steel Production.—Austrian crude steel production is expected to surpass the million-ton mark this year after having reached 763,000 tons at the end of September. On completion of the two new steelworks in Donawitz and Linz, which both have a capacity of 150,000 tons of crude steel per year, production will rise to 1,300,000 tons, according to a Reuter report from Vienna. In order to achieve this result, the increase in ore output must be maintained. Iron ore output is now running at the rate of 2,300,000 tons per year, against 1,700,000 in 1937, and will further increase to 3,000,000 tons in the next few years. Until now, production in the Styrian ore mines has been increased with the help of large E.R.P. allocations. However, considerable concern is

felt at the increased cost of capital equipment. Originally, a sum of 1,200,000,000 schillings was earmarked for development purposes, but the same programme will now require at least 2,500,000,000 schillings. By the end of this year, 1,300,000,000 schillings will have been invested.

Belgian Coke Production Record.—Belgium's coke production in October, at 541,000 tonnes, established a new all-time record, and compared with a pre-war monthly average of 451,000 tonnes. The October output brought aggregate production for the first ten months of this year to 5,020,000 tonnes, i.e., to 35 per cent more than in January-October, 1950. Output of coal-dust products in October also reached a new record—of 172,717 tonnes, of which 69,160 tonnes were briquettes. Average monthly output of coal-dust products in January-October, 1951, amounted to 150,000 tonnes, i.e., double the monthly average for the comparable periods of 1948-1950.

Brazil's Five-Year Plan.—The World Bank and U.S. Export-Import Bank have agreed to provide foreign exchange for Brazil's 10,000 million cruzeiro "National Economic Rehabilitation Plan," which covers a period of five years. The necessary financial arrangements have been made by the Brazilian Finance Minister, representatives of the U.S. Treasury and State Departments and the Presidents of two Banks. The 10,000 million cruzeiros will be raised in Brazil, while the International Bank and Export-Import Bank will finance the import of equipment. The principal projects of this plan are: the complete re-equipment of Brazil's ports; modernization of the transport system, and an increase in power output. All projects included in the plan must be approved by a mixed American-Brazilian Commission now operating in Brazil.

Minerals of Rajasthan.—Of the minerals worked in Rajasthan, some are of very great importance, writes our Indian Correspondent. For instance, the lead-zinc-silver mine of Zavar in Udaipur division might become of national importance, but the present mill can treat only about 200 tons of ore per day and a much bigger unit is required. Mica production of the State stands second in India. Similarly, minerals like bentonite, fuller's earth, calcite and steatite contribute satisfactory percentages. The gypsum deposits of Rajasthan offer a potential field for use in the manufacture of sulphuric acid. Rajasthan is the only producer of tungsten in India, though it has so far been located only in small quantities. Manganese, beryl and small quantities of radio-active minerals are being exploited as raw minerals. Glass-sand is available in two or three qualities, one of which is very fine.

U.S. Potash Industry Still on Upgrade.—The long-term upward trends in the production and sales of domestic marketable potassium salts, which had been in evidence from 1934 to 1948, and which had been interrupted in 1949 by the New Mexico strike, were resumed in 1950. The U.S. Bureau of Mines reports that the total domestic output of potassium salts reached a record high of 2,241,044 s. tons with an equivalent K₂O content of 1,286,762 tons. Sales in 1950 were 2,220,803 tons, with an equivalent K₂O content of 1,275,494 tons; both were records. Stocks in producers' hands at the end of 1950 were larger than in recent years. Apparent domestic consumption of potash (K₂O) in 1950 increased 339,629 tons from the 1949 figure. California, New Mexico, and Utah furnished virtually all the 1950 output, the largest part coming from the deeply buried Permian sylvite and langbeinite deposits in the Carlsbad region of south-eastern New Mexico.

S. Rhodesia Mineral Output Record Broken.—The value of mineral production in Southern Rhodesia broke all records last year, exceeding the previous highest figures—those of 1949—by more than £2,300,000. This is announced in the report for 1950 of the Chief Government Mining Engineer, Mr. F. Elliott. "The value of gold production," says the report, "has again risen, the increase being due to the price of gold and not to an increase in the number of f.o.z. produced. The average standard price of gold in 1950 was 248.25s. per f.o.z., an increase of 51.46s. over 1949."

"The increases in the values of the outputs of base minerals since the cessation of hostilities has been spectacular, but it must be borne in mind that the increases in values of the various base minerals have been influenced by international tension and the resultant stockpiling. It is again emphasized that, as the proportion of the gold output drops in comparison with the total output, so the mineral output of the Colony becomes more and more vulnerable to the vagaries of market fluctuations, both in price and demand."

Last year the forecast suggested that there would be a drop in gold output of about 11,000 oz. compared with 1949. The actual drop proved to be 17,017 oz. For this year it is estimated that output will drop from 10,000-13,000 oz. It is anticipated that the strong demand for base minerals will be sustained, however, and the production will increase.

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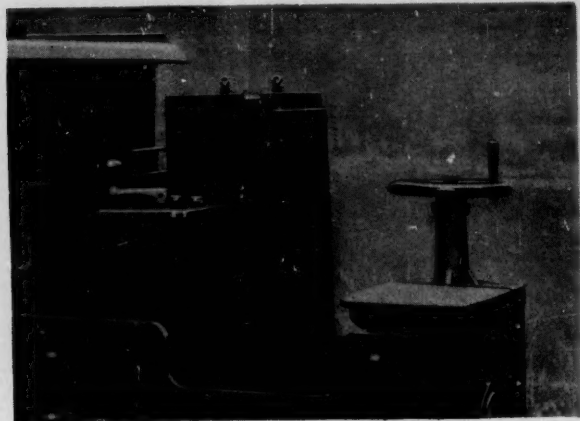
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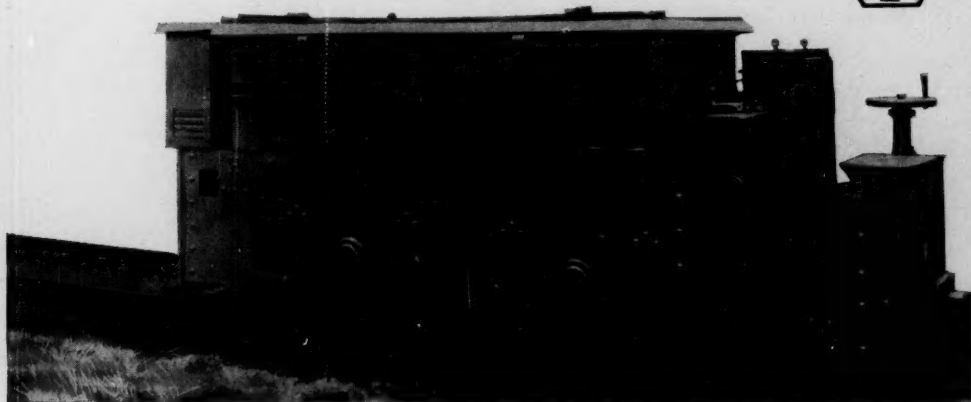


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